

THE IRON AGE

New York, March 26, 1925

ESTABLISHED 1855

VOL. 115, No. 13

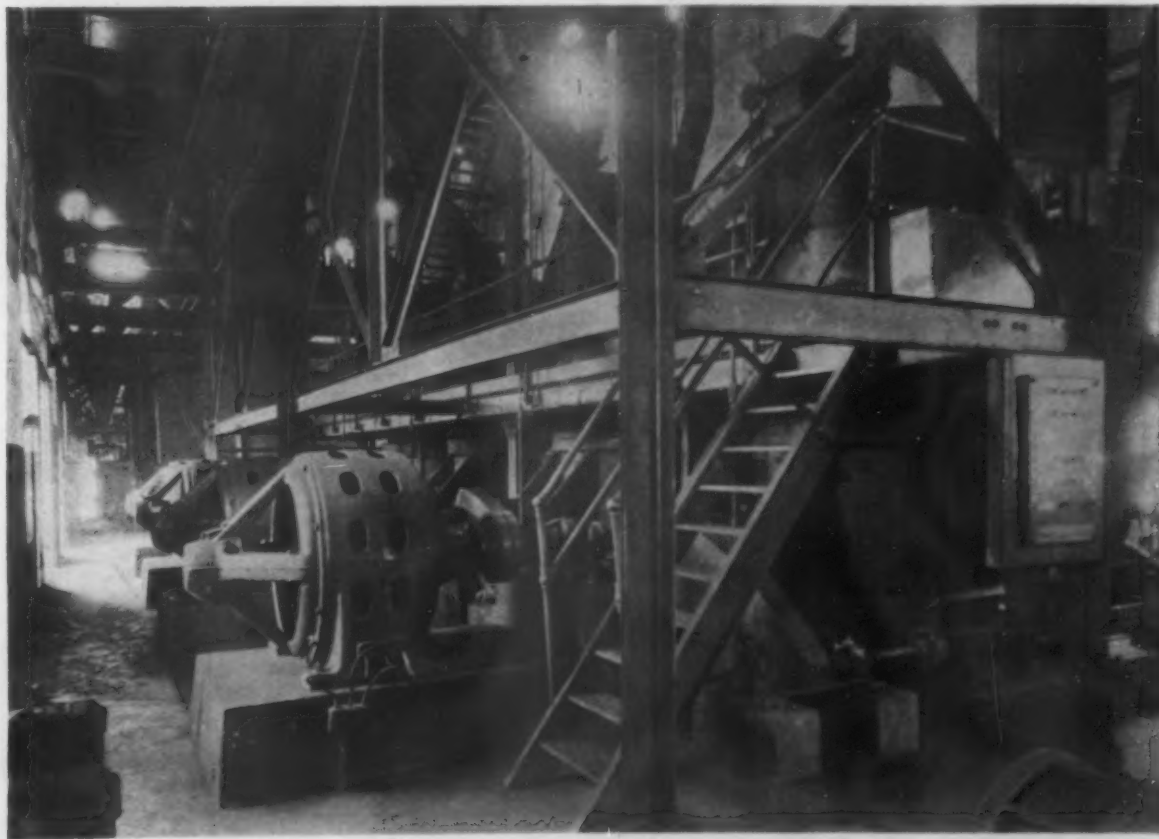
Pulverized Coal at Trumbull Steel Mills

Costs Cut Through Reducing Number of Men and Using
Cheaper Grade of Coal—Annealing Furnaces
and Boilers Served

PULVERIZED coal eventually will be used exclusively for fuel for heating and annealing furnaces in the sheet and tin mills of the Trumbull Steel Co., Warren, Ohio, according to present plans, as well as for firing all the boilers. One continuous annealing furnace and two box annealing furnaces are now fired with pulverized coal and other furnaces will be converted gradually to powdered coal fired units. Annealing furnaces formerly used, now rebuilt to adapt them for pulverized coal, present a number of interesting features. When the installation is finally completed the company will have 32 sheet and pair furnaces as

well as 18 box annealing furnaces and two continuous annealing furnaces, all fired with pulverized fuel.

An outstanding feature of the coal pulverizing plant is the complete remote control, from a central point, of the distribution of fuel from the pulverizing plant to the furnace bins. A man in the pulverizing plant fills the bins by operating a series of push buttons on a switchboard located in this plant; lights on this switchboard show when the bins are empty. The coal pulverizing plant and the system of conveying the powdered fuel to the point of consumption were designed and built by the Fuller-Lehigh Co.

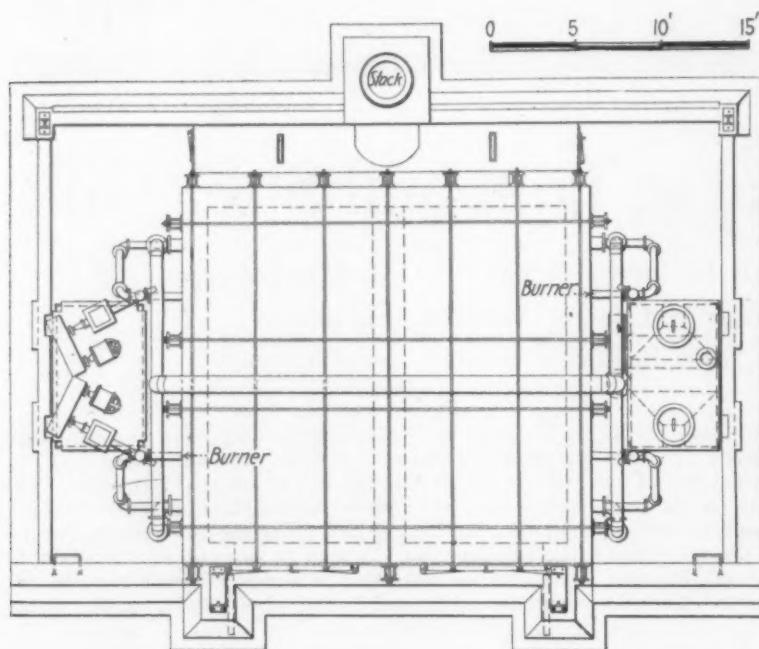


IN the Pulverizing Plant, Showing the Four Fuller Pulverizing Mills, Each of Which Discharges Into a Fuller-Kinyon Pump, Which Delivers Pulverized Coal to a Storage Bin. At right is the switchboard with push-button control. From this station the operator has complete control of the flow of coal through the entire transport line, from the weight bins to the individual furnace bins. The indicating lights on the board show whether the corresponding bin is full or empty. Another series of lights shows whether the valve is set so that the flow of coal is being directed into the corresponding bin or is being by-passed this bin and on through the main line.

The pulverized coal plant has a capacity of 700 tons in 24 hr., or sufficient to supply all the furnaces in the sheet and tin mill department and the entire fuel requirements of the new boiler plant. The first boilers using pulverized coal were placed in operation three years ago. There are two 400-hp. and one 500-hp.

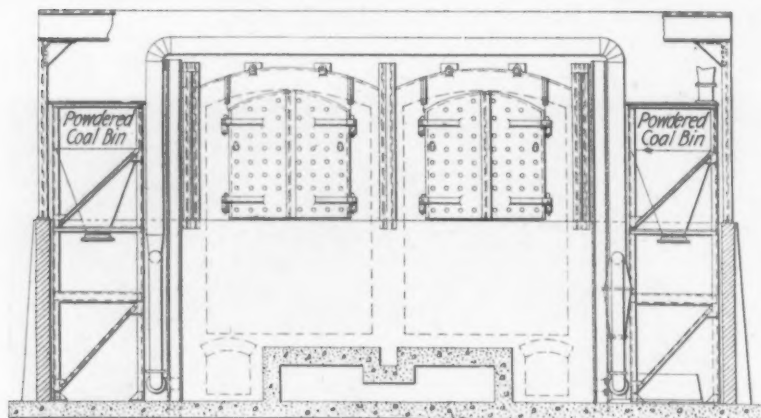
Pulverizing Plant

Fuel for pulverizing, which is run of mine or slag coal, is discharged from hopper cars into a track hopper from which a reciprocating feeder delivers it to a 30 x 30-in. Jeffrey single-roll crusher with a capacity



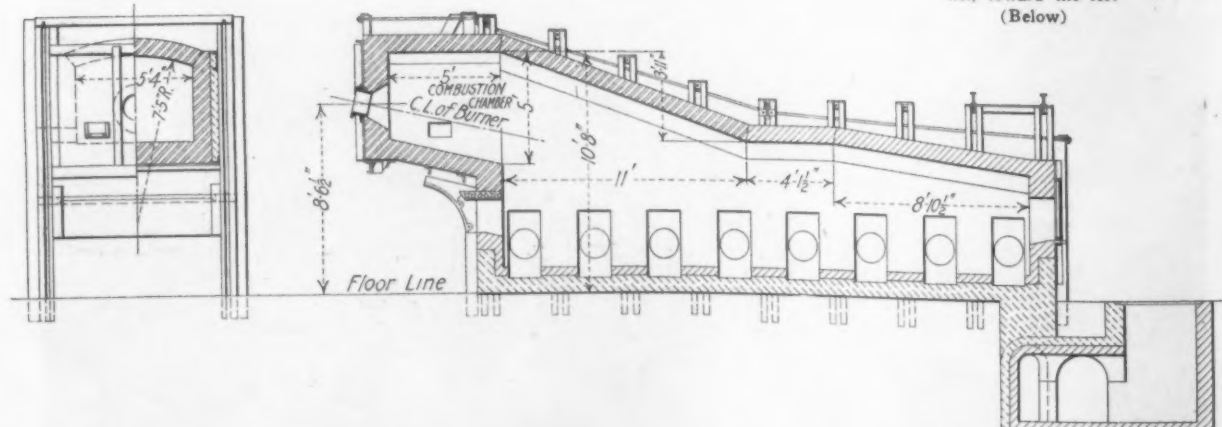
BOX - Annealing Furnace

Fitted for Use of Powdered Coal, Showing General Arrangement of Bins, Piping, Burners and Feeders. Four burners are used, two on each side, symmetrically placed. The blowers are individually driven by small motors below the coal bins



CONTINUOUS Annealing Furnace

for Sheet and Tin Mills, Fired with Powdered Coal Through a Single Burner. This furnace was so designed that rollers may be removed for replacement without tearing down brickwork. The steel moves toward the impinging flame, i.e., toward the left (Below)



Stirling boilers using pulverized fuel, while five additional boilers of 500-hp. capacity and designed for operation at 400 per cent of rating will be built. The boiler plant when completed with its eight boilers will replace the old boiler house having originally 13 stoker-fired boilers, of which nine are still operated, using untreated coal.

of 50 tons an hour. Crushed coal is discharged from the crusher onto a belt conveyor which in turn delivers it to a bucket elevator. This carries it to a spiral conveyor located in a monitor above the roof and directly above a 600-ton raw coal storage bin, into which the spiral conveyor delivers the fuel.

Coal passes from this storage bin through one or

more of 16 openings onto an 18-in. belt conveyor that delivers it to a bucket elevator, which in turn discharges it into a two-way spout that feeds into two bins, each of 15-ton capacity. These bins, through a cradle feeder on the bottom of each, feed into two 5-ft. 6-in. x 42-ft. Fuller dryers. The dryers are fired by pulverized coal, the products of combustion being drawn through them by an exhaust fan and discharged into a cyclone collector. The waste gas passes from this collector to the atmosphere, while small particles of coal that are drawn from the dryer by the fan are discharged from the bottom of the collector into spiral conveyors that deliver this material back into the system.

Each dryer has a capacity of 15 tons per hour. The coal is dried to moisture content of $1\frac{1}{2}$ per cent, from approximately $4\frac{1}{2}$ per cent initial moisture in summer and 7 to 8 per cent in winter. Leaving the dryer, the coal passes over a recording thermometer and its temperature is recorded on a chart. On the discharge

changing the fuel from a dense mass into a semi-fluid, in which condition it passes through the distributing bins to its destination. The air pressure is regulated by a reducing valve. It is stated that there is no danger of an explosion in the supply lines, as the amount of air used is much less than would be required to make the mixture combustible.

The four pumps discharge the coal into one 6-in. steel conduit leading overhead to the boiler house and from which another 6-in. line diverts and goes to the furnaces in the finishing mill building. The fuel is carried approximately 500 ft. to the boilers and 1500 ft. to the annealing furnaces. Each boiler and each furnace has a separate supply bin, these varying in size and holding sufficient fuel for 24-hr. operation.

Distributing valves, one located at the top of each bin, control the flow of coal, diverting it into the furnace bin or allowing it to continue on through the main distributing line. These valves are of the multiple



THE Two Dryers Are Individually Fired by Pulverized Coal, One of the Combustion Chambers Being Shown in Rear at the Left. The burner is supplied by a 3-in. screw feeder. A magnetic separator is located in the bottom of the discharge spout for removing metal

spout of each dryer is a magnetic separator that removes tramp iron from the coal.

From the dryers the coal is discharged onto a screw conveyor, thence to an elevator that delivers it onto another screw conveyor. This discharges it into any one of four 15-ton bins located severally above four 57-in. screen type Fuller-Lehigh pulverizing mills. Coal passes by gravity from the bins to the mills, each of which, with a capacity of $8\frac{1}{4}$ tons per hour, pulverizes the coal to a fineness to permit 73 per cent of it to pass through a 200-screen mesh.

Coal thus pulverized is discharged to 6-in. Fuller-Kinyon pumps, one for each mill, being direct connected to the mill discharge spouts and having individual drives. The pumps deliver the fuel to an 80-ton storage bin, beneath which are four 5-ton weigh bins, each mounted on an indicator dial Fairbanks scale. This permits keeping an accurate record of the amount of fuel used in the various furnaces. After weighing, the coal passes by gravity into four 6-in. Fuller-Kinyon pumps which distribute it to the boilers and furnaces.

Distributing the Prepared Fuel

The material is aerated by a small amount of compressed air at the discharge end of the pump, thus

discharge port type, electro-pneumatically operated and remotely controlled from the switchboard in the pulverizing plant. By pushing a button on the signal board the valve is set and a mercoid switch connected to the valve mechanism completes a circuit which lights a lamp on the same board, indicating to the operator that the coal is flowing into the indicated bin. An air line by-passing the pump parallels the conduit and furnishes air for the electro-pneumatic distributing valves.

A material level indicator is mounted over each bin. This consists of a paddle suspended on a pivot and connected to a mercoid switch on the top of the bin. The paddle is deflected when the material reaches a predetermined level. The mercoid switch makes and breaks the electrical contact that furnishes the light on the switchboard. The lighted bulb shows that the bin is empty, but goes out when it is filled to its high level. The mercoid switch connects also with the distributing valve, automatically actuating the closing mechanism of that valve, shutting off the flow to the bin when the latter is filled and causing the fuel to pass on to the main line and to the next bin. A vent pipe at the top of each bin allows the air that enters with the fuel to pass out to the atmosphere through a butterfly valve, which is closed when the bin is filled.

Each boiler has five Fuller horizontal flare-type burners, each fed by a single-screw feeder. The feeders are driven through a gang drive and individual clutches from a variable speed motor, so that variable loads on the boiler may be controlled by the speed of the feeder screws. The feeder delivers the coal into mixing tees, where it is mixed with primary air that carries the fuel from the tees to the burners.

Primary air is furnished by a Buffalo Forge Co. blower for each boiler, with a capacity of 4500 cu. ft. a minute at $3\frac{1}{2}$ oz. pressure. About 40 per cent of the air necessary for combustion is mixed with the coal before reaching the burners. The remaining 60 per cent of air is introduced by stack draft through adjustable openings around the burner and through the front and rear ash clean-out doors. The boilers are regularly operated at 250 per cent of rating, with peak loads going up to 380 per cent. Draft for the three present boilers is supplied by a sheet steel stack lined with fire brick, approximately 10 ft. in diameter and 210 ft. high and having sufficient capacity to take care also of one of the new boilers.

Rebuilt Annealing Furnaces

Substitution of pulverized fuel necessitated rebuilding and enlarging the combustion chambers of the annealing furnaces formerly hand fired. The continuous annealing furnace, of the Costello type, is 26 ft. long and 6 ft. 6 in. wide. This has an overhung combustion chamber 5 ft. 4 in. wide on the delivery end and extending 5 ft. beyond the end of the furnace proper. The top of this chamber is 3 ft. 11 in. higher than the top of the furnace.

The steel is discharged through a door underneath the combustion chamber. This door is a curved casting, carried on four track wheels, and lined with Sil-O-Cel brick. The position of the burner brings it in a straight line with the center line of the first roller on the entrance side. The furnace has eight 36 x 18-in. cast iron plug doors on each side, built in two sections, so that it is not necessary to take out the brick work to remove a roller. The roller shafts extend through the doors. Each door has a hinged flap near the bottom for cleaning out the dust and another at the top to permit inspection of material going through.

Fuel is supplied from the bin through a 3-in. screw feeder. The entire air supply for combustion is furnished by a Buffalo blower with a capacity of 2500 cu. ft. at $2\frac{1}{2}$ oz. pressure. This pressure may be varied according to the amount of coal consumed. Formerly 300 lb. of coal was used per ton of steel but this fuel consumption has been reduced considerably by the substitution of pulverized fuel.

Two box annealing furnaces of the under-fired type

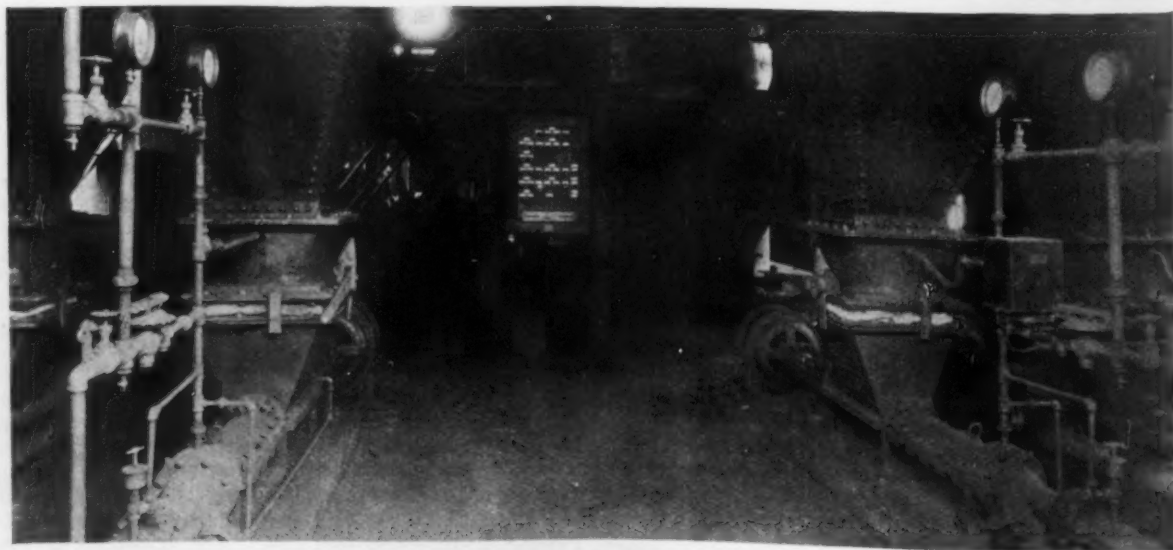
were rebuilt for powdered coal. One is a single-chamber furnace and the other a double-chamber furnace, with hearths 9 ft. 7 in. wide and 21 ft. 6 in. long inside and 7 ft. 6 in. high to the spring of the arch. The furnace is located in a concrete pit 10 ft. below the floor. The double-chamber furnace is fired by four burners, two on each side, the fuel being burned in two combustion chambers below the hearth. The distance from the hearth to the bottom of the combustion chamber is 6 ft. 6 in. The combustion chamber, 5 ft. wide and 4 ft. high to the spring of the arch, extends the full width of the furnace.

Products of combustion pass from the combustion chamber to the annealing chambers through two openings, one for each chamber, 18 in. wide and 6 ft. 9 in. long. After entering the annealing chamber they pass over and around the chamber and leave to the stack flue through three openings, each approximately 9 in. wide and 3 ft. long. The flue, which is 30 in. wide and 30 in. high to the spring of the arch, extends the full length of the furnace.

Each chamber is served by one 3-ton powdered coal bin, with two spouts through which the coal is discharged into two 3-in. Fuller screw-type feeders, from which it is carried to the combustion chamber by one Buffalo blower with a capacity of 3000 cu. ft. per minute at 6 oz. pressure. Forty per cent of the air required for combustion is supplied by the blower and 60 per cent is induced.

Before the air supplied by the blower is mixed with the coal at the feeder it is preheated by being forced through a system of piping installed in the stack flue. The preheated air is delivered from the fan into an 8-in. pipe, reduced to 7 in. in the flue, and reaches the burner at a temperature of 500 to 600 deg. Fahr. This arrangement lowers the temperature of the flue gas and tends to increase the efficiency of the furnaces. Each feeder is driven by a 2-hp. variable speed motor with a speed range 500 to 1500 r.p.m., providing a wide range of fuel feed. The control of the motor regulating the fuel supply is at a switchboard at furnace side.

Savings found from the use of the system are both in coal and labor, particularly the latter. The fuel cost has been reduced by the use of a cheaper grade of coal. At present three men are required to fire five coal-fired annealing furnaces and it is expected that when the system is completely installed one man will take care of 18 furnaces, his work being mostly looking after the burners. It is stated that only about three men will be required to take care of the eight pulverized coal-fired boilers, one for water tending and two for ash removal and general cleaning up, oiling, etc. This will eliminate a stoker and boiler repair gang of about eight men, making a total reduction of five men in the boiler house.



IN Foreground Are the Four Fuller Pumps Which Deliver the Fuel to the Boilers and Furnaces. Each pump is connected to a 5-ton weigh bin mounted on an indicator scale. The coal passes by gravity to the weigh bins and to the distributing pumps. The switchboard for remote push-button control appears in the center

Buffers and Polishers Equipped with Chain Drive

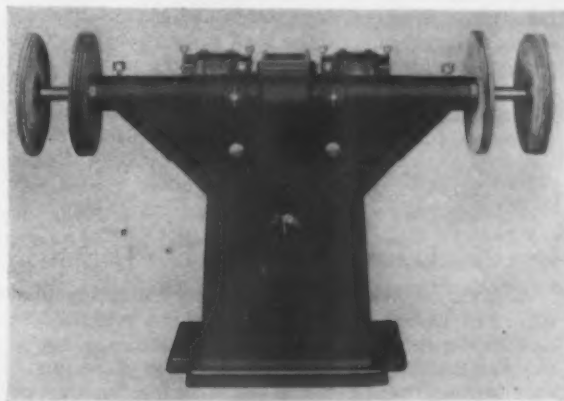
The use of chain drives is a feature of the heavy-duty buffing and polishing machines illustrated, which have been placed on the market recently by the Cleveland Armature Works, Inc., Cleveland. The motors are mounted close to the spindles as shown, and a variety of spindle speeds can be obtained with alternating-current motors, 60 or 25 cycles.

The double-spindle extra heavy-duty buffer and polisher, shown in the left-hand illustration, consists of one casting forming the motor base, central chain box and spindle housings. Special motors equipped with flanged end-bells are bolted to each side of the chain box, their shafts projecting into the chain box through slotted openings, which permits of moving the motors back to compensate for chain slack. The spindles are inclosed in tubes which are part of the main casting

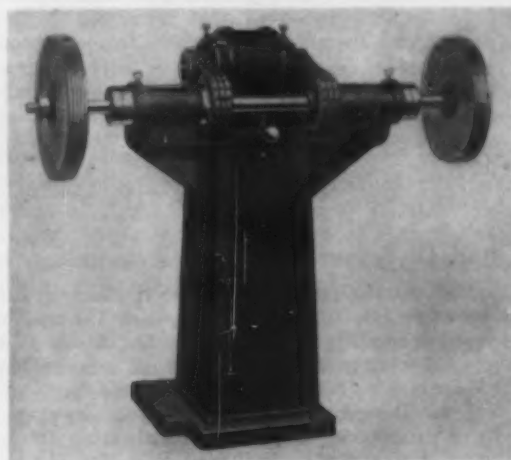
shaft lock to hold it rigidly while changing wheels. The spindles are 1¼ in. in diameter in the wheels and 1½ in. in diameter in the body.

The right-hand and left-hand halves of the machine can be started and stopped independently and may be operated at different speeds. Each motor is controlled by an oil circuit breaker, which is operated by button in front of the operator, and is provided with time-limit overload protection. The bearings are lubricated by light grease contained in cups. The standard spindle speeds on 60 cycles are 2300, 2600, 2900 and 3100 r.p.m. and on 25 cycles 2300, 2600, 2800 and 3100 r.p.m. Other speeds may be arranged for. Four sizes of the machine with spindles 48, 58, 60 and 70 in. long, respectively, are available. The motors are from 2 to 6-hp. or from 4 to 12-hp., total.

The heavy-duty buffer and polisher has a single spindle which is driven by chains from the motor, as shown in the right-hand illustration. The chains are



The Double Spindle Buffer and Polisher Is Shown Above. The single spindle machine at the right has inclosing housing removed to show drive arrangement



and one end of each spindle projects into the chain box. The spindles are driven by silent steel chain running on hardened steel sprockets. The chain box forms an oil reservoir of 2 gal. capacity, and lubrication is by means of slingers on the motor shafts which dip and keep the chains and sprockets constantly bathed in oil. Pet cocks at the rear permit of checking the oil level, and a drain is provided so that the chain box may be cleaned conveniently when necessary.

Shafts are of chrome-nickel steel, and Timken tapered adjustable roller bearings are used throughout. There are eight such bearings and adjustments, required only at long intervals, may be made from outside without disturbing the set up. Each spindle is provided with a

multiple, one for each horsepower, are leather faced and run deep in V-grooves on the pulley. The motor base and spindle housing are one casting and provision is made for adjusting the motor to compensate for chain slack. Control is by means of oil circuit breaker, which is operated by a button at front of the machine. The standard spindle speeds are 2200, 2500 and 2800 r.p.m. on 25 or 60 cycles. Timken tapered adjustable bearings with light grease lubrication are employed. The V-chain does not require lubrication.

The machine is available in two frame sizes with spindle lengths of 48 and 60 in. overall, and with motors of 2, 4, 6 and 7½ hp., 60 or 25 cycles. The weights are from 1200 to 1500 lb.

Dictionary of Specifications Being Published

Present plans for the Dictionary and Encyclopedia of Specifications, which is to be compiled and published by the United States Department of Commerce, in cooperation with various technical and industrial organizations, provide for ten major divisions or classifications, of which two or more will be of definite interest to the iron and steel and allied industries. One section will be devoted to ores, metals and manufacturers (except machinery and vehicles) and another section will be devoted to machinery and vehicles. There will also be sections on chemicals and allied products, wood and paper, textiles, non-metallic minerals, etc.

In compiling data for the dictionary correspondence has been carried on with about 500 public purchasing agencies and with a similar number of trade associations and technical societies. Some of the material for the book has already been sent to the printer. The printed dictionary will be a book of some 600 pages and its index will contain 6000 or more references to

commodities or groups of commodities. The cost to the public for the book will be \$2, which is stated to be the actual cost of printing. It has been agreed to adopt the so-called standard catalog size, namely 7½ x 10½ in. and it will be in loose-leaf form.

At the latest meeting of the advisory board the following organizations were represented: American Electric Railway Association, American Engineering Standards Committee, American Society for Testing Materials, Associates for Government Service, Inc., Chamber of Commerce of the United States, National Association of Purchasing Agents, National Conference of Governmental Purchasing Agents, Society of Automotive Engineers, Bureau of Foreign and Domestic Commerce, United States Bureau of Standards, and Division of Simplified Practice of the Department of Commerce. Other associations on the advisory board which were not represented are the American Hospital Association, National Association of Manufacturers, National Conference of Business Paper Editors and the National Electric Light Association.

HARDENING METALS

Three Methods, Covering Also Alloys, Discussed by Dr. Carl Benedicks

WASHINGTON, March 24.—At a joint meeting of the Washington Academy of Sciences and various technical societies held at the Cosmos Club, Washington, March 19, Dr. Carl Benedicks, noted Swedish metallurgist and director of the Metallographic Institute, Stockholm, delivered an address on the hardening of metals and alloys.

On the basis that hardness is the resistance of a body to a permanent change of shape there are three main methods of increasing the hardness of metals which deserve special consideration: (1) Cold working, (2) Admixture of another constituent which itself is very hard, (3) Production or retention of a solid solution.

According to Dr. Benedicks, the amorphous metal hypothesis is not necessary for an adequate explanation of hardening, including that produced by cold work, as the twin lamellae, frequently formed by slip when metals are deformed, interlock and so resist further deformation. A similar result is obtained when uni-directional slip takes place as when the displacement in the space lattice is in more than one plane.

A well-known example of hardening by the second method is the addition of carbon to iron. Pure iron had a hardness in the neighborhood of 80, which is increased to about 200 when 0.9 per cent carbon is added.

Probably the most important method of hardening is that relating to solid solutions. There is now convincing proof for a wide range of substances that solid solutions are harder than either of the constituent metals. Copper-nickel alloys were cited as one example. Likewise stearic acid with a hardness of 5.6 and palmitic acid with a hardness of 8.0 when combined to form a solid solution show an increase to 11.0. It was stated that the more similar the constituent metals the less is the increase in hardness of the solid solution.

The hardening of carbon and high-speed steels, when quenched, may be explained in the same manner. In these cases there are two solid solutions: (1) Austenite, which is a super-cooled solid solution of carbon in iron, and (2) martensite, which is a supersaturated solid solution of carbon in alpha iron. The high temperature of heating, required in the case of high-speed steels, is largely due to the high proportions of tungsten present which raises the temperature of transformations on heating. In this respect tungsten acts like chromium, silicon and other metals which appear to be more soluble in alpha than in gamma iron.

Quad City Foundrymen's Association

Major R. A. Bull, research director, Electric Steel Founders' Research Group, Chicago, was the speaker at the regular monthly meeting of the Quad City Foundrymen's Association held March 16, at the LeClaire Hotel, Moline, Ill. Major Bull traced the history of the steel castings business and showed changes in methods of production of steel castings during the last few years. His statistics indicated that crucible steel castings have practically disappeared from the market and that converter steel castings are a very small percentage of the total. Electric and open-hearth steel castings are now the predominating kinds of steel castings manufactured. Reference was also made to progress in the heat treating of steel castings.

The meeting was one of the largest held by the Quad City Foundrymen's Association this winter, having been attended also by members of the American Society for Steel Treating and the American Society of Mechanical Engineers.

American Machinery Sales in Europe

ERIE, PA., March 24.—Speaking last Thursday before the Foreign Trade Conference of the Erie Chamber of Commerce, Samuel H. Cross, chief of the European division of the Department of Commerce, declared that the European outlook has improved. He said that this is due to the satisfactory settlement of the more important difficulties in connection with the reparations problem and the complete entry into effect of the Dawes plan.

Mr. Cross said, in part:

"As far as Europe is concerned, the American machinery industry is primarily interested both in the markets there offered and in the intensity with which German and French competition may be expected to develop throughout the markets of the world. From time to time complaints are heard of increasingly liberal terms granted by German exporters which hamper the extension of American machinery sales. Such a report reached the bureau last week from our Warsaw office, and if this situation prevails in Poland, it doubtless may be traced also in the more important markets of South America, the Far East, and the Dutch East Indies. While some apprehension is entertained as to the possible use of credits to German industry to finance exports competing with our own products, it is not believed that this apprehension need produce any widespread alarm."

To Lecture on Automobile Design

Dr. Pierre Lemaire, an authority on automobile design, and named by the French Ministry of Education as exchange professor to the United States in engineering and applied science, is lecturing at Columbia University and will continue his work at the University of Pennsylvania, Johns Hopkins, Cornell, Harvard, Massachusetts Institute of Technology and Yale.

Professor Lemaire, who resigned from the French Navy in 1920, has since built up and directed a laboratory of scientific research at Lyons for Rochet-Schneider, manufacturer of automobiles. He has given particular attention to problems relating to the vibration of chassis and the proper adjustment of springs of automobiles.

In his lectures, Professor Lemaire will deal with "Spring Suspension of Vehicles." He has recently published his researches on oscillations of torsion of crankshafts, on the dynamic equilibrium of rotating parts, on the recording of accelerations, etc.

During the war he directed the large wireless station at Bordeaux. Later he organized at Toulon a center for physical studies applied to marine warfare. Upon his arrival in America Professor Lemaire was welcomed by a committee representing the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers.

New England Trade Conference

PROVIDENCE, R. I., March 23.—Preparations are being made for the New England Trade Conference to be held here April 29-30 under the auspices of the Chamber of Commerce. Secretary Hoover has assured the committee on arrangements that the Department of Commerce will cooperate fully in the efforts to make the conference the most successful gathering for the promotion of New England's foreign trade ever held.

S. H. Cross, chief of the European division of the Department of Commerce, and H. A. Butts, assistant chief of the Far Eastern division, are already listed on the conference program. Several experts from the department who have specialized in New England products will attend. C. D. Snow, director of the Foreign Trade Department of the U. S. Chamber of Commerce, will also speak.

Robert S. Holding, Jr., of the Brown & Sharpe Mfg. Co., is chairman of the general conference committee.

Steel Corporation Earnings Decline

Annual Report Shows Sharp Reduction of Iron and Steel
Production—Wages Not Changed—Large Capital
Expenditures to Be Repeated This Year

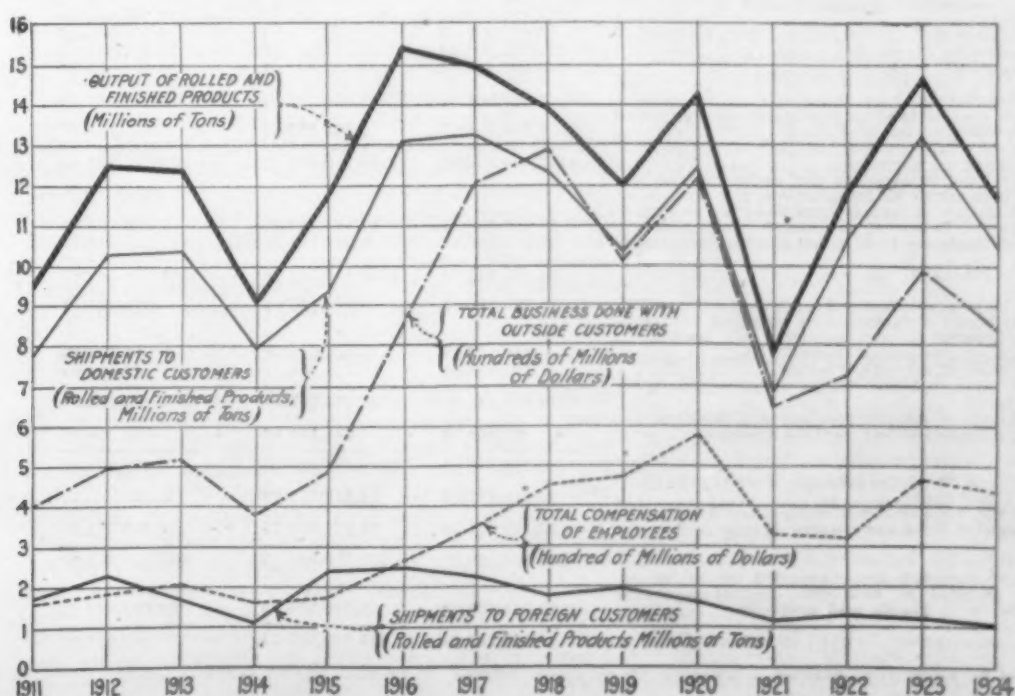
THE twenty-third annual report of the United States Steel Corporation for the year ended Dec. 31, 1924, covers a period which Judge Gary, in his general remarks, describes as "fairly good." The average earning per employee was virtually the same as in the preceding year despite the fact that 1924 showed a sharp decrease in earnings of the corporation. The average earning per employee, including general administration and selling force, was \$5.85 per day in 1924 and \$5.83 in 1923. The production of rolled and finished steel products for sale shows a decrease for 1924 of 20.4 per cent compared with 1923. The blast furnace production declined 24.2 per cent and the steel ingot production 18.9 per cent. Production of cement increased 5 per cent.

"The very favorable condition which attended the steel industry of the United States at the opening of the year 1924 continued during the early part of the year," says Chairman Gary. "The operations of the subsidiary companies as reflected by their tonnage output of finished products, which equaled 86 per cent of capacity in the first quarter, dropped to 69 per cent in the second quarter and to 55 per cent in the third. In the last quarter there was a substantial improvement, the percentage of production rising to 69 per cent, the average for the entire year being 70 per cent of rated capacity. Concurrently with diminution in the domestic demand for products there was a gradual weakening in prices of a number of the leading products. For the entire year, however, the prices received in 1924 for the total tonnage of rolled and finished steel products shipped to the domestic trade netted \$3.17 per ton more than the average price received in 1923 for an equivalent tonnage of similar products respectively. The export business for the year, while of fairly good

volume as to tonnage, was largely conducted under severe price competition and the average price received in 1924 for all such products was 74 cents less per ton than the 1923 average for a similar tonnage of the respective products shipped in 1924.

"Beginning in August there was a noticeable increase in demand for products which continued during the early fall and reached substantial proportions following the Presidential election. Since August inclusive and to the date of writing this report, new tonnage booked has exceeded each month the output shipped although the latter has been on a constantly increasing scale, reaching in February, 1925, about 90 per cent of capacity. At the close of 1924 the tonnage of unfilled orders on the books of the subsidiary companies for various classes of rolled and finished steel products totaled 4,816,676 tons compared with 4,445,339 at the close of the preceding year; and at Feb. 28, 1925, the tonnage of unfilled orders was 5,284,771 tons compared with 3,187,072 tons at July 31, 1924, the low point in that year. With the increased demand for products which developed in the fall of 1924, there has been an improvement in prices obtainable although substantial tonnages were booked for delivery in the early part of 1925 at the lower level to which prices receded in 1924. The cement business of the corporation's subsidiary engaged therein was maintained during 1924 at the maximum capacity of the plant, the output shipped exceeding any previous record.

"Notwithstanding the general adverse conditions as mentioned which attended the business for the year, the results from an earning and net income standpoint, while not yielding a proper return on the value of the investment employed, may be considered as fairly good under the circumstances. Compared with 1923, the



FOURTEEN Years'
Course of Five
Significant Features
in the History of
the Business of the
United States Steel
Corporation. In
1924 all five of the
items showed a
decrease, the out-
put of rolled and
finished products
dropping to the
level of 1922 and
1915 and consider-
ably below those of
1912, 1913, 1916,
1917, 1918, 1919,
1920 and 1923.
Total business done
with outside cus-
tomers was at the
1916 level and much
below all subsequent
years except 1921
and 1922

operating earnings for the year before deducting depreciation and depletion allowances, interest and sinking fund charges, show a decrease of 14.2 per cent only, notwithstanding the volume of business done as reflected by shipments of rolled and finished products shows a decrease of 19.8 per cent."

Employees and Pay Rolls

The average number of employees in the service of all companies during the year, and the total wages and salaries in comparison with corresponding results for the preceding year, were as follows:

Employees of	1924 Number	1923 Number
Manufacturing properties..	177,078	180,727
Coal and coke properties..	26,054	33,354
Iron ore properties.....	15,022	15,311
Transportation properties..	24,264	27,135
Miscellaneous properties..	4,335	4,259
Total	246,753	260,787
Total wages and salaries	\$442,458,577	\$469,502,634
Average Earnings per Employee per Day for Year		
All employees, exclusive of general administrative and selling force.....	\$5.74	\$5.73
Total employees, including general administrative and selling force.....	5.85	5.83

Volume of Business

The total value of business transacted by all companies during the year, as represented by their combined gross sales and earnings, equaled the sum of \$1,263,711,469, as compared with a total of \$1,571,414,483 in the preceding year.

This amount represents the gross value of the commercial transactions conducted by the several subsidiary companies, and includes sales made between the subsidiary companies and the gross receipts of the transportation companies for services rendered both to subsidiary companies and to the public.

The earnings for the year resulting from the above gross business represent the combined profits accruing to the several corporate interests on the respective

sales and services rendered, each of which is in itself a complete commercial transaction.

Capital Expenditures

The expenditures made by the corporation and the subsidiary companies during the year for the acquisition of additional property, new plants, extensions and improvements, less credits for property disposed of, and including net additional lock-up in stripping and development expense at mines, equaled the sum of \$79,619,986, classified generally as follows:

For manufacturing properties.....	\$55,920,958
For coal properties.....	5,798,073
For iron ore properties, including additional net investment in mine stripping and development	6,298,763
For railroads and lake docks.....	6,547,726
For ocean, Great Lakes and river transportation service	2,490,231
For limestone, fluorspar, gas and water properties	1,299,878
For land companies—largely for housing facilities for employees.....	1,264,357
Total	\$79,619,986

"The expenditures on capital account in 1924 were large, but were necessary," says the report, "in order to maintain the plants and properties in modern condition, to enable operations to be conducted in the most economical manner, to diversify production and secure the greatest benefit through the production, transportation and conversion into marketable steel of the raw materials resources of the organization; also to provide added capacity to meet the growing demands of the trade in certain lines of products and in certain territories. A material part of the outlays was for the rebuilding of departments and facilities which had become more or less obsolete and had served their term of usefulness. This is especially true of coke plants, power plants and some of the rolling mills. In the rebuilding and replacement, however, a far greater capital outlay and investment are required to produce a given product result as compared with conditions prevailing in earlier years, since rebuilding now calls for from double to treble the amount of investment necessary to secure substantially the same ca-

Comparative Income Account for the Fiscal Years Ended Dec. 31, 1924 and 1923

	1924	1923	+ Increase — Decrease
Earnings—Before charging interest on bonds and mortgages of subsidiary companies:			
First quarter	\$52,129,738.62	\$36,874,674.77	+ \$15,255,063.85
Second quarter	43,407,005.15	49,940,029.97	— 6,533,024.82
Third quarter	32,715,060.16	49,112,517.68	— 16,397,457.52
Fourth quarter	32,931,664.06	52,026,445.43	— 19,094,781.37
Total for year.....	*\$161,183,467.99	*\$187,953,667.85	— \$26,770,199.86
Less, interest on outstanding bonds and mortgages of the subsidiary companies.....	8,068,656.07	8,306,993.48	— 238,337.41
Balance of earnings.....	\$153,114,811.92	\$179,646,674.37	— \$26,531,862.45
Less, charges and allowances for depletion and depreciation applied as follows: viz.:			
To depreciation and replacement reserves and sinking funds on bonds of subsidiary companies....	38,687,668.14	41,745,434.23	— 3,057,766.09
To sinking funds on U. S. Steel Corporation bonds	10,205,168.92	9,724,720.38	+ 480,448.54
Net income in the year.....	\$104,221,974.86	\$128,176,519.76	— \$23,954,544.90
Deduct:			
Interest on U. S. Steel Corporation bonds outstanding	18,274,207.49	18,764,567.62	— 490,360.13
Premium on bonds redeemed and acquired for sinking fund, viz.:			
On subsidiary companies' bonds.....	182,350.09	165,611.86	+ 16,738.23
On U. S. Steel Corporation bonds.....	785,295.44	774,464.84	+ 10,830.60
Balance	\$84,980,121.84	\$108,471,875.44	— \$23,491,753.60
Add: Net balance of sundry receipts and charges, including adjustments of various accounts.....	87,069.77	235,188.82	— 148,119.05
Dividends on U. S. Steel Corporation stocks, viz.:			
Preferred, 7 per cent.....	\$85,067,191.61	\$108,707,064.26	— \$23,639,872.65
Common—1924, regular 5 per cent, extra 2 per cent; 1923, regular 5 per cent, extra ¼ per cent.....	25,219,677.00	25,219,677.00	.....
	35,581,175.00	29,227,393.75	+ 6,353,781.25
Surplus net income.....	\$24,266,339.61	\$54,259,993.51	— \$29,993,653.90
Less, sums appropriated and expended or to be expended account of additions, improvements or betterments to plants and property.....	20,000,000.00	40,000,000.00	— 20,000,000.00
Balance carried forward to undivided surplus	\$4,266,339.61	\$14,259,993.51	— \$9,993,653.90

*Balance of earnings after making allowances for estimated amount of Federal income taxes.

Production for Two Years

Products	1924 Tons	1923 Tons	1924, Decrease	
			Tons	Per Cent
Ores Mined—				
In the Lake Superior region (iron ore):				
Missabe and Vermilion ranges.....	17,864,794	24,658,317	6,793,523	27.6
Gogebic, Menominee and Marquette ranges.....	3,167,716	3,005,181	162,535*	5.4*
In the Southern region—Alabama (iron ore).....	3,690,262	3,239,370	450,892*	13.9*
In Brazil, S. A. (manganese ore).....	51,769	112,241	60,472	53.9
Total	24,774,541	31,015,109	6,240,568	20.1
Limestone Quarried (includes dolomite and fluorspar).....	5,033,889	6,575,694	1,541,805	23.4
Coal Mined—				
For use in the manufacture of coke.....	21,041,573	28,234,030	7,192,457	25.5
For steam, gas and all other purposes.....	6,696,434	7,055,871	359,437	5.1
Total	27,738,007	35,289,901	7,551,894	21.4
Coke Manufactured—				
In beehive ovens.....	3,265,899	7,142,901	3,877,002	54.3
In by-product ovens.....	11,142,142	11,694,730	552,588	4.7
Total	14,408,041	18,837,631	4,429,590	23.5
Blast Furnace Production—				
Pig iron	12,520,329	16,527,830	4,007,501	24.2
Spiegel, ferromanganese and ferrosilicon.....	163,400	201,396	37,996	18.9
Total	12,683,729	16,729,226	4,045,497	24.2
Steel Ingot Production—				
Bessemer ingots	3,856,559	5,451,390	1,594,831	29.3
Open-hearth ingots	12,622,298	14,878,560	2,256,262	15.2
Total	16,478,857	20,329,950	3,851,093	18.9
Rolled and Finished Steel Products for Sale—				
Steel rails (heavy and light tee and girder).....	1,392,668	1,649,906	257,238	15.6
Blooms, billets, slabs, sheet and tin plate bars.....	612,326	715,244	102,918	14.4
Plates	1,280,831	1,783,846	503,015	28.2
Heavy structural shapes.....	1,019,923	1,204,395	184,472	15.3
Merchant bars, hoops, skelp, light shapes, etc.....	2,313,994	3,007,662	693,668	23.0
Tubing and pipe.....	1,248,378	1,563,982	315,604	20.2
Wire rods	147,336	213,518	66,182	31.0
Wire and wire products.....	1,290,704	1,636,580	345,876	21.1
Sheets (black and galvanized) and tin plates.....	1,411,075	1,774,467	363,392	20.5
Finished structural work.....	477,082	458,595	18,487*	4.0*
Angle splice bars and all other rail joints.....	220,792	288,118	67,326	23.4
Spikes, bolts, nuts and rivets.....	58,364	84,456	26,092	30.9
Axles	93,183	154,876	61,693	39.8
Steel car wheels.....	75,328	104,271	28,943	27.9
Sundry steel and iron products.....	80,924	81,553	629	.8
Total	11,722,908	14,721,469	2,998,561	20.4
Miscellaneous Products—				
Zinc	61,982	64,205	2,223	3.5
Sulphate of iron.....	22,483	36,079	13,596	37.7
Fertilizer—"duplex basic phosphate".....	13,009	15,748	2,739	17.4
Fertilizer—sulphate of ammonia.....	157,961	150,000	7,961*	5.3*
Ammonia (as liquor).....	811	2,528	1,717	67.9
Benzol products	140,314	143,312	2,998	2.1
Universal Portland cement.....	15,156,000	14,440,000	716,000*	5.0*

*Increase.

capacity of output, due to both the very much higher prices prevailing for construction cost than when the previous facilities were installed and the fact that modern types of facilities are invariably of a vastly improved character, permitting operation at a lesser operating expense, though involving a higher initial investment cost. A safe conservatism demands that within reasonable lines these added capital requirements should be provided, if possible, from current earnings rather than by the issue of fixed interest-bearing debt and of capital. The amount unexpended at the close of 1924 on appropriations authorized during the year for additions and improvements will call for an outlay on capital account during 1925 of the approximate sum of \$80,000,000." The capital expenditures in 1923 amounted to \$60,762,920.

Miscellaneous

Employees Stock Subscriptions.—The employees of the corporation and of the subsidiary companies were in January, 1925, offered the privilege of subscribing for shares of common stock of the United States Steel Corporation at the price of \$125 per share, all other conditions and terms being substantially the same as those under which similar offerings have been made in previous years. To the date of this writing subscriptions have been received from 39,470 employees for a total of 82,948 shares. At Dec. 31, 1924, there were 49,152 employees who were registered stockholders, holding an aggregate of 149,451 shares of preferred stock and 538,553 shares of common stock. There were also 14,821 additional employees who had in force open

subscription accounts covering purchase of stock, but were not registered holders of shares.

Profit Sharing Plan.—In accordance with the profit sharing plan adopted by the stockholders in 1921, appropriation was made from the earnings of 1924 of a fund for distribution under and in accordance with such plan. The allotment and distribution was made in February, 1925, by the profit sharing committee of stockholders elected at the annual stockholders' meeting in April, 1924. Of the awards made by the committee, 60 per cent was paid in cash and the remainder covered by certificates of conditional interest in shares of common stock of the corporation in which the committee invested such part of the appropriation. The stock covered by the certificates is deliverable to holders in January, 1930, provided they are then in the service of the corporation or its subsidiaries, or is deliverable prior to that date if they die while in the service or are retired under the corporation's pension plan.

Pensions.—Pensions were paid during the year by the trustees of the United States Steel and Carnegie Pension Fund to retired employees to the amount of \$1,683,921, compared with \$1,448,113 disbursed in the preceding year. Pensions were granted during the year to 843 retiring employees. At the close of the year there were 4478 names on the pension rolls, a net increase of 424 during the year. Since the inauguration of the plan in 1911 an aggregate of \$11,227,156 has been paid in pensions.

Housing and Welfare.—During the year a net additional amount was advanced employees on contracts and mortgages to assist them in building and acquiring

Foreign and Domestic Shipments

The shipments of all classes of products in comparison with shipments during the preceding year were as follows:

	1924 Tons	1923 Tons	Increase or Decrease Tons Per Cent	
<i>Domestic Shipments</i>				
Rolled and finished steel products.....	10,493,102	13,196,298	2,703,196	20.48 Dec.
Pig iron, ingots, ferromanganese and scrap.....	271,418	308,475	37,057	12.01 Dec.
Iron ore, coal and coke.....	289,561	405,875	116,314	28.66 Dec.
Sundry materials and by-products.....	118,681	108,965	9,716	8.92 Inc.
Total tons all kinds of materials, except cement	11,172,762	14,019,613	2,846,851	20.31 Dec.
Universal Portland cement (bbl.).....	14,941,143	14,329,295	611,848	4.27 Inc.
<i>Export Shipments</i>				
Rolled and finished steel products.....	1,033,788	1,177,524	143,736	12.21 Dec.
Pig iron, ferromanganese and scrap.....	3,089	2,691	398	14.79 Inc.
Sundry materials and by-products.....	115,141	106,049	9,092	8.57 Inc.
Total tons all kinds of materials.....	1,152,018	1,286,264	134,246	10.44 Dec.
Aggregate tonnage of rolled and finished steel products shipped to both domestic and export trade	11,526,890	14,373,822	2,846,932	19.81 Dec.
Total value of business (covering all of above shipments, including cement, completed cars, barges and car floats delivered and other business not measured by the ton unit):				
	1924	1923	Decrease	
Domestic (not including inter-company sales)	\$763,251,221	\$905,744,282	Amount	Per Cent
Export	79,718,221	87,171,880	7,453,659	8.55
Total	\$842,969,442	\$992,916,162	\$149,946,720	15.10

ing homes under the corporation's home-owning plan. At Dec. 31, 1924, the advances due from employees on loans for above purposes, secured as stated, totaled \$8,907,726. These advances or loans are repayable in installments over a period of years, with interest at 5 per cent.

Accident Prevention.—The activities of the corporation and the subsidiary companies which were inaugurated 20 years ago under a formally organized plan in the effort to reduce the number of accidents to employees at the various operations, were continued with intensity during the past year. In the year 1924 the total number of disabling accidents of all kinds per 100 of employees was 75.69 per cent less than in 1912 (the earliest year for which statistics are available for all disabling accidents); and for serious and fatal accidents the number per 100 employees was 54.65 per cent less than in 1906, when the campaign for reduction in accidents was first formally undertaken. Liberal outlays are currently made for accident prevention and safety work. In 1924 the total expended was \$1,911,954, cov-

ering both installation of devices and appliances, rearrangement of equipment to minimize danger to employees and protect them from injuries, and in instructing employees to avoid liability to injury.

Accident Relief.—The payments made during the year by subsidiary companies for work accidents, including liabilities accrued under State compensation laws, actual payment of which is spread over a period of years, totaled \$5,080,775, compared with \$4,843,172 in preceding year. Eighty-nine per cent of the total payments in 1924 was paid directly to the injured employees or their families.

Sanitation.—The expenditures by the subsidiary companies during the year in providing modern sanitary facilities at the several plants and operations for the health and comfort of employees totaled \$3,231,880, compared with \$3,019,363 in 1923. At the close of the year there were in and about the plants and works 4581 sanitary drinking fountains, 2128 comfort stations with toilet facilities, including 24,152 washing faucets or basins, 4465 showers and 175,691 lockers.

Number of Stockholders.—On Dec. 31, 1924, there were 156,164 registered stockholders, of whom 17,779 held both preferred and common stock. The number holding preferred was 78,115 and common 95,828.

Inventories

	Dec. 31, 1924	Dec. 31, 1923
Ores—Iron, manganese and zinc...	\$81,518,333	\$73,907,919
Limestone, fluxes and refractories..	5,388,401	5,255,856
Coal, coke and other fuel.....	12,153,798	16,414,130
Pig iron, scrap, ferromanganese and spiegeleisen	23,213,114	23,934,176
Pig tin, lead, spelter, copper, nickel, aluminum and dross and skimmings	10,216,726	10,632,742
Rolls, molds, stools, annealing boxes, etc.	13,323,733	12,759,194
Ingots—Steel	1,676,510	2,112,229
Blooms, billets, slabs, sheet and tin plate bars, etc.	28,922,181	25,934,058
Wire rods	1,617,042	1,492,927
Skelp	1,922,705	2,355,456
Finished products	68,218,528	58,872,408
Manufacturing supplies, stores and sundry items not otherwise classified	37,115,096	38,934,139
Mining supplies and stores (for ore and coal properties).....	6,389,880	7,909,361
Railroad supplies and stores.....	6,890,807	7,045,570
Merchandise of supply companies..	2,115,078	2,072,477
Material, labor and expense locked up in uncompleted bridge, structural and other contract work	\$41,990,201	
Less bills rendered on account	39,707,656	
Stocks abroad and on consignment	2,282,545	4,915,408
Material in transit.....	28,622,447	21,975,028
	3,846,062	5,454,932
Total	\$335,432,986	\$321,978,010
Less, inventory reserve.....	50,391,232	51,220,055
Balance	\$285,041,754	\$270,757,955

Complaints as to Railroad Rates Invited by Commission

WASHINGTON, March 24.—The iron and steel and cognate industries manifestly are included among those from which the Interstate Commerce Commission will accept communications charging that railroad rates are out of line, provided such correspondence is sent in connection with the general investigation of the rate structure of the country which the commission has ordered. The commission has stated that it will receive communications up to May 15, and another month will be given to carriers replying to complaints.

As a matter of fact, however, the investigation appears not to be treated with a great deal of seriousness. It was ordered in compliance with the so-called Hoch-Smith resolution passed by the recent Congress. The reading of the resolution gives the impression that it was intended merely as a sop to farmers in the Middle West who have been affected by the depression in agricultural products.

In announcing its order, the commission said that it will not enter at once upon extensive hearings but intends to conduct the investigation "in a manner conducive to full and orderly development of material facts and with as little delay and expense to shippers, carriers, and the Government, and as little disturbing effect upon production, distribution, and the free flow of commerce, as may be found practicable."

British Non-Ferrous Metals Research

Institute of Metals Discusses Aluminum Alloys, Commercial Copper and Other Technical Problems at Annual Spring Meeting

(Special Correspondence)

LONDON, March 12.—Prof. T. Turner, who was today reelected president of the Institute of Metals at the annual meeting held in London, announced that membership of the Institute had increased during the year by over 100 and he hoped that, as conditions were becoming more normal, scientific men of all nationalities might be able to join together for the public good. The majority of members enrolled during the year are resident overseas; there have been particularly large accessions to the membership from the United States.

A "house fund" has been started with a view to providing the Institute with a building of its own and an initial donation of £1,000 toward the fund has been received from L. Sumner of the Broughton Copper Co., a past-president of the Institute. The work of the corrosion research committee has been reorganized and the department of scientific and industrial research has now made itself responsible for the purely scientific investigation of corrosion phenomenon, while the committee undertakes to continue the technical work in connection with the condenser tube corrosion.

A number of papers were discussed, a summary of the salient features being the following:

Grain Size and Hardness

In an investigation of the effect of grain size upon hardness and annealing temperature, H. T. Angus and P. F. Summers have found that in coarse-grained, hard-worked copper and bronze an increase in hardness is obtained after annealing for one hour at temperatures of 150 and 200 deg. C. The coarser the grain the greater the increase in hardness for the same amount of mechanical work. In fine-grained metal, annealing at these temperatures for one hour will cause a progressive fall in hardness. A fine-grained metal will recrystallize at a lower temperature than a coarse-grained; and in fine-grained pure copper (containing more than 1200 grains per sq. mm.) softening may proceed to the usual hardness value accompanying recrystallization without the latter taking place. In bronze (4.5 per cent tin), grain growth is much more rapid at high temperatures than in pure copper which has received the same amount of reduction by rolling. This may be on account of the increased hardness due to the presence of tin, thus necessitating more mechanical work for the same reduction by rolling. The relation between grain size and hardness is similar for copper and bronze, and also for 68:32 brass as derived from figures obtained by Bassett and Davis. A linear relationship appears to exist between the area of grain boundary per cubic millimeter of metal and the Brinell hardness of these metals.

Aluminum Alloy Castings

S. L. Archbutt described some experiments, carried out at the National Physical Laboratory, on methods of improving the properties of aluminum alloy castings. The results obtained are regarded as indicating the possibilities of a method of treating aluminum and certain of its alloys, which serves to eliminate a considerable proportion of dissolved gas and thus reduces unsoundness, and to a large extent removes pin-holing. The process suggested consists in allowing the molten alloy or metal to cool slowly in the crucible in the furnace until it has just completely solidified. It is then remelted and may be carefully stirred, raised to the pouring temperature and cast.

Ingotting the metal is not satisfactory, as the ingots cool too quickly, and during remelting are too

much exposed to the furnace gases. In a later experiment passage of an inert gas through the melt during slow cooling and solidification has been found to improve still further the soundness of resulting sand-cast bars. Slightly anomalous results have been obtained in some cases, and it is not yet clear how far the method is of value in other alloys, whether consisting mainly of aluminum or other metals. It is evident that much further investigation is required. Meanwhile, it is understood that simultaneously and independently Prof. C. A. Edwards and W. E. Prytherch, of Swansea, working on the effect of gases in copper, have discovered a similar effect obtained by solidification in the crucible in the case of pure copper.

Commercial Copper

A comparison of the properties of certain distinctive varieties of commercial copper has been made by T. G. Bamford, the primary object of which was to ascertain their relative durability under service conditions, particularly as constructional parts of locomotive fire boxes. It will be recalled that Sir Henry Fowler, in the 1923 autumn lecture to the Institute of Metals (reported at the time in *THE IRON AGE*) enunciated the following among the chief causes of failure of copper when used in engineering:

- (1) Cracking, as the result of repeated stress;
- (2) Wear, probably due to erosion and oxidation;
- (3) Gassing, due to the heating of the metal to temperatures as high as 750 deg. C. in a reducing atmosphere.

He further stated that copper containing as little as 0.015 per cent of oxygen was ruined by treatment in reducing gases at 650 deg. C. Mr. Bamford has found that the phosphorus in commercial copper, which has been deoxidized with this element, does not impair the mechanical properties of the metal. Three lots containing up to 0.2 per cent of phosphorus were extremely strong, quite ductile, and more resistant to alternating stresses than "tough-pitch" varieties which were free from phosphorus. Deoxidized low arsenical, high arsenical, and 1.5 per cent nickel-copper containing up to 0.014 per cent of oxygen withstand severe gassing treatment, which would ruin "tough-pitch" metal. Deoxidized copper, containing 1.5 per cent of nickel, is more resistive to harmful influences arising from severe heating in either reducing or oxidizing atmosphere than are either "tough-pitch" (arsenical or non-arsenical) or deoxidized arsenical coppers.

Actually the tensile strength of this nickel-copper is vastly improved, its hardness greatly increased, no brittleness is developed, and it preserves a high ductility after severe gassing treatment. The nickel-copper referred to oxidizes less rapidly than any other variety tested. The "tough-pitch" and the deoxidized varieties, not containing nickel, oxidize approximately to the same extent, but, when the "tough-pitch" varieties scale, the oxide penetrates into the metal, more particularly so in the case of non-arsenical "tough-pitch" copper, on which a very rigidly adherent scale is formed. It follows that "tough-pitch," non-arsenical copper will give most trouble in hot-working operations where it is desired to avoid entanglement of scale in the metal. The resistance which 1.5 per cent nickel-copper possesses to gassing, as well as its augmented hardness and strength

(Concluded on page 944)

Iron Industry and the Business Cycle

Cycles of Pig Iron Production and Prices, 1901 to 1924—

Eliminating the Effects of Long-Time Trend
and of Seasonal Influences

BY HOMER B. VANDERBLUE AND WILLIAM L. CRUM*

PIG iron prices and pig iron production are among the best simple indexes of business and industrial activity, for the iron industry is highly responsive to changes in general business conditions. Business depression is marked by declining prices and greatly curtailed output in the iron trade; business revival, by rising prices and expanding production, and business prosperity, by high prices and an output which taxes the capacity of the industry. When the boom collapses, iron prices drop and production shrinks.

Monthly figures of pig iron production, beginning with October, 1901, have appeared regularly, since then, in *THE IRON AGE*. Previously only statistics showing the number of furnaces in blast, and the

for basic and foundry irons: the Valley quotation for basic iron and an average of the Chicago, Philadelphia and Birmingham prices for foundry iron. The composite price is expressed in dollars per gross ton. It has been published only since September, 1921; but, as the calculations have been carried back through October, 1901, the price as well as the production data are available for the complete period.

These composite prices, divided by the "all commodities" price index of the United States Bureau of Labor Statistics, which traces the movement of general prices, give a set of figures which largely eliminates the variations in pig iron prices due to fluctuations in the general price level. What is in effect accomplished

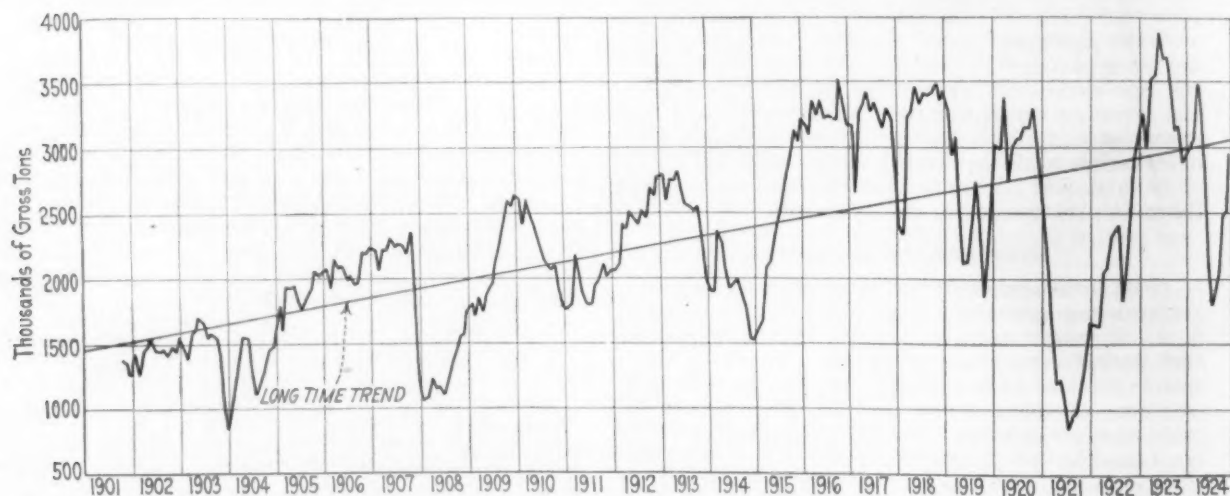


Fig. 1.—Production of Pig Iron, Actual Data Compared with Long-Time Trend

"weekly capacity" of those furnaces had been available each month. The latter data (now on the daily basis, rather than weekly) are still published, and a simple percentage ratio of the furnaces in blast to the total number of furnaces may be used as a rough measure of activity in the industry. But, since the capacity of blast furnaces is not uniform, such ratio figures—giving the percentage, of total capacity, in blast—are likely to convey an erroneous impression. It seems desirable, therefore, to utilize the figures of actual monthly output as the raw material for calculating indexes of pig iron production.

Statistics gathered and printed by *THE IRON AGE* cover production by coke and anthracite furnaces, but exclude production by charcoal furnaces, which is a negligible part of the total output.† The tonnage figures are presented for each of the important producing areas, as well as for the United States as a whole. The present article considers only the total figures; subsequent discussions will present parallel analyses for the district statistics.

Cyclical Indexes of Pig Iron Prices

THE IRON AGE also publishes currently a "composite price" of pig iron. This is based on the average prices

is a comparison of the price movements in pig iron with price movements in general.‡ This series of ratios, shown graphically in the dotted curve of Fig. 3, thus exhibits how pig iron prices varied relative to the prices of "all commodities" at wholesale. For convenience, we shall refer to these ratios as the *cyclical indexes* of pig iron prices.

Cyclical Indexes of Pig Iron Production

Calculation of *cyclical indexes* of pig iron production requires a fairly complicated mathematical adjustment. Briefly, the problem is to construct indexes of production which throw into clear relief those changes in pig iron production which arise out of the alternations of general prosperity and depression.

Fig. 1 presents a curve based upon actual data for total production of pig iron in the United States, month by month, for the interval from October, 1901, through December, 1924. The figures from which this chart was drawn are presented in Table I. The chart shows a general upward drift, which records the normal growth

†This operation of division by a wholesale price index is called "deflation" by many statisticians, and is designed to remove the influence of changes in the general price level (or, in the purchasing power of the dollar). There are, of course, considerable objections against the use of an index of general wholesale prices to indicate changes in the purchasing power of the dollar; but it is believed that the is sufficiently accurate for the present purpose. Grave doubts exist concerning the validity of this deflation process in many of the instances in which it is now so widely used. The device seems appropriate in the present problem, chiefly because the series deflated is itself a price series, rather than a value series (as is so often the case).

*Of the Harvard University Committee on Economic Research, Cambridge, Mass. This is the first of a series of articles which, in considerably greater detail of treatment and with scientific development of the statistical methods of analysis employed, are to appear later in book form.

†At no time since 1901 has charcoal iron reached 3 per cent of the total; in the past ten years it has averaged less than 1 per cent.

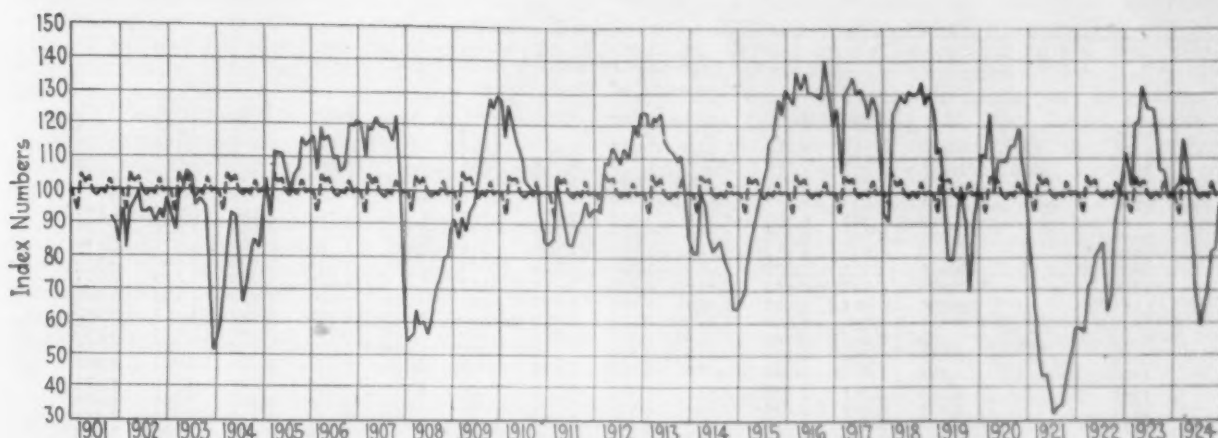


Fig. 2.—Production of Pig Iron, Per Cent Ratios to Normal Trend, Compared with Seasonal Movement (Dotted Line)

of the iron industry, in addition to slight seasonal variations in the level of production within any one year and very considerable wave-like fluctuations extending over several years, which are due to the influence of the business cycle. It is these wave-like fluctuations which the cyclical index of pig iron production is designed to measure. The long-time tendency for the level of total production to rise throughout the quarter-century interval is called the *secular trend*; it is shown in Fig. 1 by the line marked "long-time trend," which thus traces the line of normal growth (the line of secular or long-time trend) of pig iron production. §

Since the beginning of the century new and larger blast furnaces have been added to the equipment of the industry and the "normal" output has steadily increased. Actual output has fluctuated above and below this normal, it has been close to the capacity of the industry when the index has been at 120 to 125, it has been much below capacity when the index has been at 60 or below. In the former case a boom is recorded; in the latter, a depression.

To allow for this secular influence, in calculating an index which measures the cyclical changes in the volume of pig iron production, each monthly item of the original series is first expressed as a percentage of the "normal" item for that month. The numerical value of the normal for a particular month is indicated by the position of the corresponding point on the straight line, as measured from the base-line. The normal thus measures the production which would be attained during any month if there were no other cause of variation than the long-time trend. Table II and Fig. 2 (the heavy curve) show the series corrected for long-time movement by expressing each item as a per cent ratio of the normal for each month. The trend

§There are various ways of measuring the secular trend of a series, but that most generally used at present is the method of "least squares" described by Professor W. M. Persons, *Review of Economic Statistics*, Prel. Vol. 1, page 12. This consists in "fitting" a straight line, or other curve subject to a specific mathematical law, to the actual data. The process of fitting implies determining the position of the line (or the shape and position of the selected curve) in such manner that it lies as near as possible to all the points representing, on the chart, the actual data.

line which inclined upward in Fig. 1 is necessarily horizontal in Fig. 2, and is represented as 100 per cent.

Eliminating Seasonal Variation

The next problem is the measurement and elimination of the usual seasonal variation. That there is a seasonal fluctuation present in the series is clear from a casual study of either Fig. 1 or Fig. 2. From January to February of each year the movement of the curve is usually downward, with an upturn in March, followed by a less precipitate decline in April. The peak month is March, May or October in most years of the series. Of course, this movement is to be accounted for, at least partially, by the fact that February and April are relatively short months, whereas January and March and October are long months. Nevertheless, the difference in length of month is not sufficient to account for all of the recurrent month-to-month change.

Part of the regular variation from month to month, apparent each year at the same time, is undoubtedly due to seasonal fluctuations in the conditions of production. Although the operation of a blast furnace is largely independent of seasonal influences of the latter type, temperature changes undoubtedly affect productive efficiency. Moreover, it is quite conceivable that the blowing-in and blowing-out of individual furnaces are controlled to some extent by seasonal conditions; and, on this ground alone, aggregate production would be expected to respond in the long run to seasonal conditions. And there is, in the industry, a striving for high production at times when, by tradition, high production has come to be expected.

The dotted line in Fig. 2 traces the usual seasonal fluctuation in pig iron production, the 100 line being taken as the monthly average for the year. Adjustment for seasonal influence is made by subtracting the seasonal indexes, which trace the usual seasonal or month-to-month variation, from the percentages of normal given in Table II, and adding 100 to each result. The figures thus obtained register the percentage ratio, which the output in any given month bears to the composite normal for that month, the "normal" now

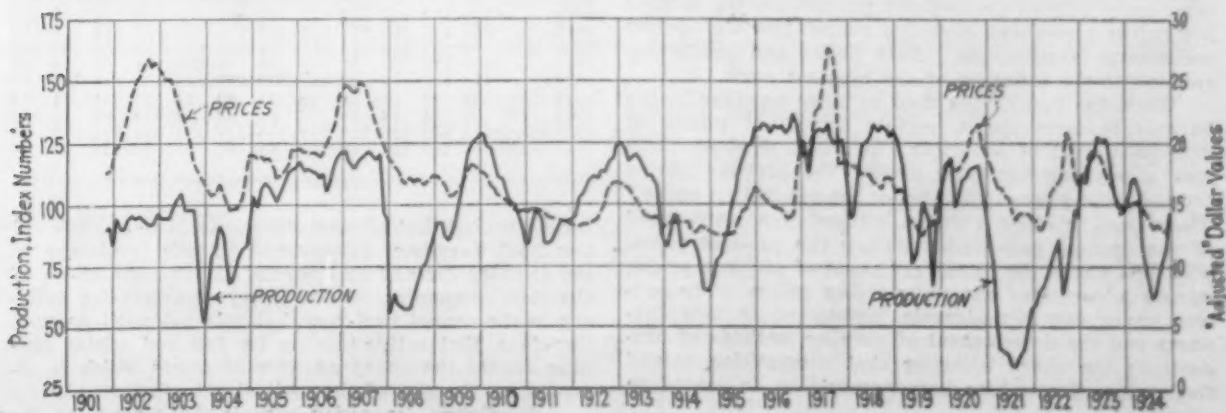


Fig. 3.—Cyclical Indexes of Pig Iron Production (Scale at Left) and Prices (Scale at Right)

Table I. Aggregate Production of Pig Iron
(Thousands of Gross Tons)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1901.....	1,438	1,258	1,445	1,475	1,543	1,447	1,442	1,468	1,419	1,382	1,362	1,274
1902.....	1,472	1,390	1,590	1,608	1,713	1,673	1,546	1,571	1,553	1,481	1,433	1,538
1903.....	921	1,205	1,447	1,555	1,534	1,292	1,106	1,167	1,352	1,425	1,039	846
1904.....	1,781	1,597	1,936	1,922	1,936	1,793	1,741	1,843	1,899	2,053	2,014	2,045
1905.....	2,068	1,904	2,155	2,073	2,098	1,976	2,013	1,926	1,960	2,196	2,187	2,235
1906.....	2,205	2,045	2,226	2,216	2,295	2,234	2,255	2,250	2,183	2,336	1,828	1,234
1907.....	1,045	1,077	1,228	1,149	1,165	1,092	1,218	1,348	1,418	1,563	1,577	1,740
1908.....	1,801	1,703	1,832	1,738	1,880	1,929	2,101	2,246	2,385	2,600	2,547	2,635
1909.....	2,608	2,397	2,617	2,483	2,390	2,265	2,148	2,106	2,056	2,093	1,909	1,777
1910.....	1,759	1,794	2,188	2,065	1,893	1,787	1,793	1,926	1,977	2,102	1,999	2,043
1911.....	2,057	2,100	2,405	2,375	2,512	2,440	2,410	2,512	2,463	2,689	2,630	2,782
1912.....	2,795	2,586	2,763	2,752	2,822	2,628	2,560	2,543	2,505	2,546	2,233	1,983
1913.....	1,885	1,888	2,348	2,270	2,093	1,918	1,958	1,995	1,883	1,778	1,518	1,516
1914.....	1,601	1,675	2,064	2,116	2,263	2,381	2,563	2,780	2,853	3,125	3,037	3,203
1915.....	3,185	3,087	3,338	3,228	3,351	3,212	3,226	3,204	3,202	3,509	3,312	3,171
1916.....	3,151	2,645	3,251	3,335	3,417	3,270	3,342	3,248	3,134	3,303	3,206	2,883
1917.....	2,412	2,319	3,213	3,288	3,446	3,324	3,421	3,390	3,418	3,487	3,354	3,434
1918.....	3,302	2,940	3,090	2,478	2,108	2,115	2,429	2,743	2,488	1,864	2,392	2,633
1919.....	3,015	2,979	3,376	2,740	2,986	3,044	3,067	3,147	3,129	3,293	2,935	2,704
1920.....	2,416	1,937	1,596	1,193	1,221	1,065	865	954	986	1,247	1,415	1,649
1921.....	1,645	1,630	2,036	2,072	2,307	2,361	2,405	1,816	2,034	2,638	2,850	3,087
1922.....	3,230	2,994	3,524	3,550	3,868	3,676	3,678	3,449	3,126	3,149	2,894	2,921
1923.....	3,019	3,075	3,466	3,233	2,615	2,626	1,785	1,887	2,053	2,477	2,510	2,962

including due allowance for both long-time growth and the usual seasonal change.

These figures appear in Table III and the solid line curve of Fig. 3. Since they are corrected for both long-time movement and seasonal influence, they show the true cyclical fluctuations of the pig iron output. They are called the *cyclical indexes* (or adjusted relatives) of pig iron production.

Price and Production Cycles

Fig. 3 presents the cyclical indexes of pig iron prices and of pig iron production for the entire period for which the statistics are available. The successive phases of a series of business cycles are disclosed by these two curves—revival, prosperity, boom, crisis and depression recur in regular sequence. The advances are sometimes slow and halting, especially in

to users of iron. Hence, despite the generally rising trend of prices in the pre-war years, pig iron prices declined.

The second important point to be noticed is that at major turning points, i.e., from the depression phase of the cycle into the recovery stage or from the prosperity phase into the depression—the two cyclical curves do not "time" together. When a period of depression lies ahead the price curve has a distinct tendency to turn down in advance of the production curve. It did so in 1903, 1907, 1909, 1911, 1920, and finally in 1923. This lag of production, after prices have ceased to advance or have even shown some weakness (and before the actual crisis has occurred), is due in part, no doubt, to the failure of pig iron manufacturers to realize that the end is at hand. Even when such realization exists there is always difficulty in bringing about a prompt curtailment of output, and the general fear of increasing "overhead" per unit of output undoubtedly contributes to this unwillingness to curtail.

In a period of depression, on the other hand, production normally expands some time before prices feel the stimulus of the upswing of business. This was the case in 1902, 1908, 1912, 1919, 1921, and recently in the fall of 1924. Even in 1915, when war orders stimulated the demand for iron, the advance of prices

Table II. Pig Iron Production: Per Cent Ratios to Normal Trend

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1901.....	94	82	94	96	100	93	93	94	90	94	91	87
1902.....	93	87	99	100	106	104	95	97	95	87	63	51
1903.....	56	72	87	93	92	77	65	69	79	85	82	94
1904.....	103	92	112	111	111	103	99	105	107	116	113	115
1905.....	116	108	119	115	116	109	110	105	107	120	119	121
1906.....	120	110	119	118	122	119	119	119	115	123	96	64
1907.....	54	58	64	59	60	56	62	69	72	79	80	88
1908.....	91	85	92	87	94	96	104	111	118	128	125	129
1909.....	127	116	127	120	115	109	103	101	98	100	91	84
1910.....	83	85	103	97	88	83	83	89	91	97	92	94
1911.....	94	96	109	108	114	110	108	113	110	120	117	124
1912.....	124	115	122	121	124	115	112	111	109	111	97	86
1913.....	81	81	101	97	86	82	83	85	80	75	64	64
1914.....	67	70	84	88	94	99	106	115	117	128	123	131
1915.....	129	126	137	131	136	130	130	129	128	140	132	120
1916.....	125	105	129	132	135	129	131	127	122	129	125	112
1917.....	93	90	124	127	129	127	131	129	130	133	126	130
1918.....	125	111	113	93	79	79	91	102	92	69	80	97
1919.....	111	110	124	100	109	109	109	114	113	119	106	97
1920.....	87	70	57	43	44	38	31	34	35	44	50	58
1921.....	58	57	71	72	80	82	84	63	70	91	98	105
1922.....	111	102	121	121	132	125	125	117	106	106	98	98
1923.....	101	103	116	108	87	67	59	63	68	82	83	97

their early stages; the declines, precipitate. But always low prices accompany curtailed output and high prices accompany large output. Both prices and production respond to the influence of the business cycle.

While the two curves tend to move together in the various business cycles, certain important points of difference must be indicated. In the first place, there was a growing tendency during the pre-war period for the price curve to fall below the production curve.* There was, in other words, a distinct downward trend of the cyclical price index during the pre-war years. This was due to the downward trend of pig iron prices, during a period of generally rising prices. The pre-war years saw considerable investment in new furnaces and the development of cheaper methods of production; the chart indicates that competition caused the savings from these improvements to be passed on

*As here plotted, with the two zero points not coincident.

Table III. Pig Iron Production: Per Cent Ratios to Normal Trend, Corrected for Seasonal Variation

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1901.....	95	89	89	94	96	94	95	94	92	91	92	84
1902.....	94	94	94	98	102	105	97	97	97	84	64	51
1903.....	57	79	82	91	88	78	67	69	79	82	83	94
1904.....	104	99	107	109	107	104	101	105	109	113	114	115
1905.....	117	113	114	113	112	110	112	105	109	117	120	121
1906.....	121	117	114	116	118	120	121	119	117	120	97	94
1907.....	55	63	59	57	56	57	64	69	74	76	81	88
1908.....	92	92	87	85	90	97	106	111	120	125	126	129
1909.....	128	123	122	118	111	110	105	101	100	97	92	84
1910.....	84	92	98	95	84	84	85	89	93	94	93	94
1911.....	95	103	104	106	110	111	110	113	112	117	118	124
1912.....	125	122	117	119	120	116	114	111	111	108	98	86
1913.....	82	88	96	95	82	83	85	85	82	72	65	64
1914.....	68	77	79	86	90	100	108	115	119	125	124	131
1915.....	130	133	132	129	132	131	132	129	131	137	133	120
1916.....	126	112	124	130	131	130	133	127	124	126	126	112
1917.....	94	97	119	125	125	128	133	129	132	130	127	130
1918.....	126	118	108	91	75	80	93	102	94	66	90	97
1919.....	112	117	119	98	105	110	111	114	116	116	107	97
1920.....	88	77	52	41	40	39	33	34	37	41	51	58
1921.....	59	64	66	70	76	83	86	63	72	88	99	105
1922.....	112	109	116	119	128	126	127	117	108	103	99	98
1923.....	102	110	111	106	83	68	61	63	70	79	84	97

lagged behind that of production. In March, 1915, the merchant furnaces, discouraged by the feebleness of the foundry demand and fearful of the competition of the steel companies, booked heavy contracts for delivery in the second half-year. It was not until August, therefore, that active bidding for fall and winter supplies caused the sharp advance of prices which is recorded by the rise of the cyclical price index.

In ordinary depression periods the reason for the

failure of prices to advance until business recovery is well under way is undoubtedly that a considerable tonnage of iron, carried over from the previous period of peak production, is in the inventory piles of the producers and users of iron. The existence of these stocks—some of which become "distress stocks," especially if the depression proves protracted, as in 1921—militates against a prompt upturn of prices immediately after demand picks up.

The curve for the cyclical index of pig iron production is much more irregular in its month-to-month movements than is the cyclical price curve. The latter shows relatively few minor irregularities, whereas the former shows many such. Production is subject to a variety of temporary influences which cause a drop in

output in a particular month, but are unlikely to bring about a flurry in prices unless continued for several months. Strikes in the industry, or in the coal fields upon which the industry is dependent for fuel, may cause such temporary drops in production; or railroad congestion, by delaying the even flow of fuel, may necessitate the banking of furnaces, as in the early months of 1917 and again early in 1918.†

†The effects of the great anthracite strike of 1902 upon pig iron output were both direct and indirect; direct in their effect upon the furnaces using anthracite and indirect because of the effect upon coke supplies. This condition became worse when mines in the bituminous fields of West Virginia and Alabama also struck. In the latter months of 1903 pig iron was imported, to meet urgent requirements. In the summer of 1901, also, there had been considerable imports of foreign pig iron, and prices were so high that supplies of imported iron were used in the interior.

Stockholders Doubled in Last Seven Years

Widespread Ownership of Major Industries Brought About by Investments of Employees, Customers and General Public

THE number of individual owners of America's largest industries has doubled since 1918, according to figures compiled by Robert S. Binkerd, vice-chairman of the committee on public relations of the Eastern railroads, and submitted at the semi-annual meeting of the Academy of Political Science of New York, March 9. Mr. Binkerd selected Jan. 1, 1918, as the starting point, because it antedated the full reflection of the many economic and social impulses arising out of the war.

In the seven years from 1918 to 1925 stockholders in the enterprises listed in the table increased 2,514,394. In other words, they practically doubled. This increase was gained from the sources shown in the table.

Details by Industries

Railroads.—Twenty-six Class I railroads, representing about 60 per cent of the main-line mileage of the country, had 454,304 stockholders on Jan. 1, 1918, and 699,552 stockholders on Jan. 1, 1925. These 26 companies show an increase of 70,262 in the number of employee stockholders and 45,003 in the number of customer stockholders. The actual number of employee and customer stockholders is greater than the figures stated. The figures do not include the ownership of bonds by either employees or customers.

Street Railways.—The number of stockholders in street railways has doubled since 1918. Only a small part of this increase has come from employees or customers.

Gas and Electric Companies.—The number of stockholders in gas and electric light and power companies has slightly more than doubled since 1918. Here is to be found the great increase in the customer stockholders—815,955—since Jan. 1, 1918. As many electric light and power companies operate gas plants, also, it was deemed inadvisable to attempt a separation between the gas companies and the electric light and power companies.

Telephone Companies.—Telephone and telegraph

services show more than a threefold increase in stockholders. A substantial part of this increase comes from the employees of the telephone industry and the remainder from the general public; although no doubt the great majority of these investors are also telephone users and might be described as customer shareholders.

Packers.—The packing industry shows an increase of approximately 35,000 shareholders. Seven thousand of this increase comes from the employees of the industry, making the total employee interest today not less than 20,000 shareholders.

Oil Companies.—Ten oil companies, representing more than 10 per cent of the production of the oil industry, show an increase in stockholders from 23,502 to 161,179, or nearly seven times. The bulk of this increase comes from the general investing public. These companies include one from the Standard Oil group and a number of independent companies operating in different parts of the country. The bulk of the employee shareholders is to be found in the Standard Oil unit.

In the Steel Industry

Five steel companies, representing about 70 per cent of the production of the steel industry, show an increase from 130,923 stockholders to 223,149. These companies show the largest participation by employees as shareholders, the figure standing at 87,696.

Some picture of general manufacturing and distributive industries is had from a high-grade industrial banking house which does the financing for ten well-established, diversified manufacturing and distributive companies—boots and shoes, clothing, typewriters, automobiles, mail-order houses and department stores. This shows an increase from 25,002 stockholders in 1918 to 44,339 at the beginning of 1925. Some small part of this increase came from employees and customers.

The employee interest in all industries is under-

Industries	Jan. 1		Per Cent	Increase in Stockholders—1925 over 1918		
	1918	1925		From Employees	From Customers	From General Public
Railroads	647,689	966,170	49	70,262	45,003	203,216
Express and Pullman	12,956	23,779	84	.....	2,996	7,827
Total railroad and allied service...	660,645	989,949	50	70,262	47,999	211,043
Street railways	275,000	550,000	100	15,000	.....	260,000
Gas, electric light and power companies	1,250,000	2,611,279	109	75,000	815,955	470,324
Telephone and telegraph	107,033	371,604	247	62,649	.....	201,922
Packers	65,000	100,000	54	7,000	.....	38,000
Ten oil companies	23,502	161,179	588	21,153	800	118,724
Five iron and steel companies	130,923	223,149	70	87,696	.....	4,520
Ten high-grade manufacturing and distributing companies	25,002	44,339	77	.....	.....	19,327
Total	2,537,105	5,051,499	99	338,760	864,754	1,310,880

estimated. The bulk of the stock sold to employees is bought on the installment plan and the employee does not legally enter the list of stockholders until the period of installment payments is completed. This period generally ranges anywhere from 21 months to

five years. And all purchases of stock by employees through the regular channels, rather than through the company's special arrangement for employees, are credited, necessarily, to the "general public," for there is no means of tracing them.

BETHLEHEM MERGER HEARING

Testimony Shows Wide Variation of Prices on Same Products—Competitive Conditions Explained

WASHINGTON, March 24.—The American Equipment Co., Ernest Station, Pa., maker of machine and carriage bolts, hot-pressed nuts and boiler and structural rivets, has paid from \$5 to \$10 a ton more to one concern for its rivet and bolt rods and nut flats than to other concerns within the past six years, according to testimony at the Bethlehem merger hearing given by John A. Longacre, secretary and manager of the company. He said that the main purchases are made at the same price, but when it comes to unusual periods the prices are unusually low or unusually high. Mr. Longacre made these statements in reply to questions by Mr. Bane, who asked about the basis of quotation and whether it worked back to the f.o.b. Pittsburgh base. Mr. Longacre said that over 50 per cent of the time the price quoted on a given product at a given time is the same while for the other 50 per cent of the time "they probably vary."

Alfred Ames, secretary, treasurer and sales manager of W. Ames & Co., Jersey City, N. J., operating a rolling mill for making rerolled iron and steel bars and also maker of spikes, bolts, tie rods, etc., with a total capacity of 20,000 tons annually, said that approximately 70 per cent of the company's sales are made in New York and New Jersey and about 15 per cent represent export business. Sales are not made on a Pittsburgh base, Mr. Ames said, except where the Pittsburgh price is low. Generally, he stated, prices are made f.o.b. at the points of delivery.

Purchases of structural shapes were made from the Bethlehem Steel Co., along with others, both before and since Bethlehem acquired the Midvale Steel & Ordnance Co., and the Lackawanna Steel Co., Benjamin C. Sawyer, purchasing agent for Bethlehem Fabricators, Inc., Bethlehem, Pa., said. He also described competitive conditions existing in the steel trade and activity of manufacturers to get business by meeting the price conditions of rival producers. Both before and since the merger, Bethlehem has been one of the sources of supplies for the Philadelphia & Reading Coal & Iron Co., according to testimony of Edward L. Keane, purchasing agent. Some material had been purchased before the merger from the Cambria Steel Co., and the Lackawanna Steel Co., he said.

Bar Iron Sold on Mill Basis

Merchant iron bars formerly were sold on an f.o.b. Pittsburgh basis, but beginning in December, 1924, the quotation has been on an f.o.b. Lebanon basis, for the Lebanon Iron Co., with plants at Lebanon and Duncannon, Pa., it was stated by R. V. M. Clymer, assistant sales manager. He said the change in method of quoting was due to the Federal Trade Commission's cease and desist order against the United States Steel Corporation. Bolts and nuts, it was stated, are sold on an f.o.b. Pittsburgh basis. Other products of the company, it was stated, including staybolt iron, are sold on a mill basis. Attorney Bane asked Mr. Clymer if there is any connection between the use at the Lebanon plant of eight rotary furnaces and the discontinuance of the Lebanon plant of the use of puddling furnaces, and Mr. Clymer replied that the company is making material in the rotary furnaces and has been since September, 1919, instead of in hand puddle furnaces. He said he could not answer the question as to whether the rotary furnace is more economical than the puddling furnace. Mr. Clymer stated that he never considered

the Cambria Steel Co. a competitor in any line with the Lebanon Iron Co.

Vice-President John M. Callen of the Reading Iron Co., maker of pig iron, bar iron, cut nails and rolling mill machinery, but principally pipes and boiler tubes, said that the blast furnace of the company at Emaus, Pa., has been idle for four years because the price of pig iron is too low and added that "we are importing too much pig iron." The company's forging plant at Reading, he said, was dismantled two years ago because it was losing money. Asked if the company sells bar iron on a Pittsburgh basis, Mr. Callen replied that the company does not pay any attention to the Pittsburgh basis, and sells this product on an f.o.b. mill basis. Wrought iron pipe and charcoal tubes, he said, are sold on a Pittsburgh basis. He said that the company had bought certain materials from the Cambria Steel Co., and the Midvale Steel & Ordnance Co. before Bethlehem acquired them, and had also bought from Bethlehem both before and since the merger.

British Iron and Steel Exports Drop from January Peak

WASHINGTON, March 19.—Exports of iron and steel from Great Britain during February amounted to 298,761 gross tons, a drop of 8 per cent under those for January, which were higher than any month since last July, according to a cable received by the Department of Commerce. The major losses were sustained by pig iron and ferroalloys, plates and sheets, tin plate and rails. On the other hand, foreign consignments of galvanized sheets increased considerably.

Importation of iron and steel maintained the level of January, the February total being 234,833 tons. The shifting in the tonnages of the individual items can be observed in the table, which also gives comparative trade statistics for exports during the two months under review:

British Foreign Trade in Iron and Steel
(In Gross Tons)

Items	Imports		Exports	
	January	February	January	February
Pig iron and ferroalloys..	28,006	26,033	57,496	52,825
Ingots, blooms, billets and slabs	90,311	98,617	470	562
Iron bars, rods and angles	29,985	23,736	3,295	2,864
Steel bars, rods and angles	26,049	20,728	19,905	22,881
Structural steel	7,703	14,924	4,375	4,088
Hoops and strips	4,452	5,988	3,177	4,942
Plates and sheets	16,342	17,704	33,631	25,137
Galvanized sheets .....	.....	.....	56,903	64,350
Tin plate .....	.....	.....	43,860	30,977
Cast tubes, pipes and fittings	5,728	2,747	6,560	8,058
Wrought tubes, pipes and fittings	3,037	4,075	16,586	17,581
Rails	2,436	2,010	25,248	13,590
Other railroad material..	2,246	1,631	13,448	11,974
Wire	6,090	5,182	6,434	7,374
Wire cables and rope .....	.....	.....	1,539	1,763
Wire nails, including staples	6,029	4,825	478	340
Other wire manufactures	541	735	1,858	1,625
Nails, tacks, rivets and washers	736	790	1,577	1,479
Bolts and nuts, including screws for metals	925	935	2,778	2,896
Iron and steel castings	653	732	149	177
Iron and steel forgings	614	642	91	107

Mechanical stokers sold in February are reported by the Department of Commerce at 135, with a total of 46,298 hp. With one exception this horsepower total is the greatest in 10 months. The figures compare with 57 stokers of 27,871 hp. in January and with 110 stokers of 62,113 hp. in February, 1924. In the present list 107 stokers of 41,393 hp. are for water-tube boilers and 28 stokers of 4905 hp. for fire-tube boilers.

Special Open-Hearth Steel Castings

Intricate Products at Low Cost—High Grade Steel from
Low Grade Scrap Made in a Bosshardt Furnace
in Germany

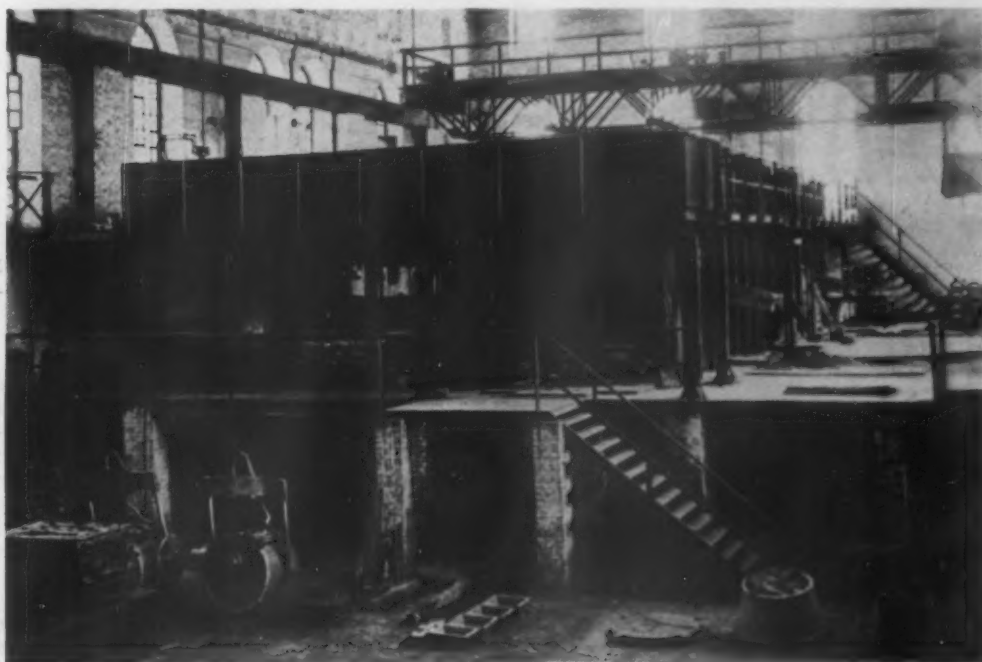
BY STERLING H. BUNNELL*

THE production of steel with a carbon content as low as 0.05 per cent, with the oxygen content too low to be detected by the Ledebur test, and at a temperature upward of 3500 deg. Fahr., so that the steel is regularly poured into thin-walled castings, is an achievement in everyday commercial operation. It is being regularly done in the special open-hearth melting furnaces of Edwin Bosshardt, at the Berliner A. G. fuer Eisengiesserei und Maschinenfabrikation (Berlin Company for Iron Casting and Machine Construction) at Charlottenburg, Berlin, Germany; also at the Dingler Machine Works in Zweibruecken, Pfalz, Germany.

The operating cost of the furnace, which is heated by bituminous coal used with special gas-producers, figured on the basis of American wages and fuel cost,

checker work, heated by the combustion of producer gas, taken direct from small special gas-producing chambers built directly on the two ends of the furnace. By a slot provided in the furnace wall, connecting with the coal space in the producer just above the grate, flaming producer gas, principally CO, is passed directly into the furnace. Above this slot is another which leads from the top of the producer above the coal, and so carries gas which is mostly compounds of carbon and hydrogen. This gas is reinforced by gas from the producer at the other end of the furnace, brought over by a cast iron pipe above the furnace. A third slot above the others leads in hot air from the checker work, and thus supplies the oxygen for the combustion of the gas.

The effect of the direct introduction of flaming CO



Two of the Special Bosshardt Open - Hearth Furnaces, Operating on Intricate Steel Castings in a German Foundry Near Berlin

would be at least \$10 per ton below the cost of melting steel in the best electric furnace. With German wages and conditions, the advantage over the electric furnace is at least twice as large. The Bosshardt furnace, however, is regularly operated with unsorted miscellaneous steel scrap of a grade which could not be utilized in the usual acid electric furnace. With this low grade scrap the furnace produces steel with any desired carbon content, free of sulphur, phosphorus and oxygen, and so "killed" that even the steel of very low carbon can be poured and will lie quiet in the thinnest of sections.

Construction of the Furnace

The Bosshardt furnace, briefly described in THE IRON AGE, June 21, 1923, page 1781, is of the open-hearth type, with the usual reversible or regenerative

is to raise the flame temperature in the furnace far above open-hearth furnace possibilities where the gas is brought from a distant producer, or where the usual oil burners are used. Temperatures above 4000 deg. Fahr. are easily maintained in the Bosshardt furnace. Further, the introduction of the air supply for combustion, above the gas and next to the roof of the furnace, has the effect of blanketing the intense heat away from the furnace arch, and so making possible operation to upward of 400 charges before the furnace arch and bridge walls must be rebuilt.

The furnace is reversed every 15 min., the active producer being checked by closing the air opening into the ash pit, while the other producer is supplied with air under the grate and so begins the active generation of CO, and its emission, flaming hot, through the slot into the melting chamber, while the cast iron transfer pipe is shut off from the connection with the gas chamber of the active producer and opened into the gas

*Consulting engineer, 347 Madison Avenue, New York. Mr. Bunnell has recently studied the operation of this furnace in Germany.

chamber of the producer now to become less active. The action of the flame now changes ends within the furnace melting chamber, giving opportunity for the other end of the roof to resist the intense heat of the flame below, while the former hottest end cools off slightly.

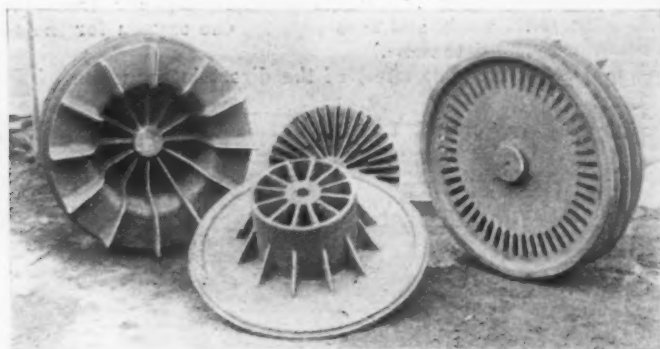
Illustrations obtained from the Berlin company show the exterior of the furnaces as now in operation. As the ground under the furnace has standing water within 6 ft. below the surface, the furnace was constructed wholly above the ground level except for the flues leading from below the checker chambers to the chimney. The charging floor is therefore about 9 ft. above the foundry floor, and the coal platform is about 9 ft. higher.

The furnace is served by a traveling crane shown in one of the illustrations. The tapping hole side is toward the cage end of the crane. The steel is run into a stopper ladle carried by the crane. One of these ladles lies on its side with the yoke standing up, near the lower left corner of the picture.

The practice at the Berlin works is to pour all castings with the stopper ladle, instead of using hand ladles filled from the large ladle to pour the smaller

latter suggests an interesting story of the war. During the European war, Mr. Bosshardt was at the Dingler Machine Works, held in Germany by the authorities, although he was a Swiss citizen. As the submarines grew larger and the campaign against the Allied shipping extended, it became necessary to build Diesel engines of greater size and extreme lightness, necessitating cast steel frames and bedplates. Those for the Deutschland, the freight-carrying U-boat which made two trips to the United States on commercial business, were cast successfully at the Dingler works by the use of metal from these high-temperature steel furnaces.

The steel for remelting, which is obtainable in Germany, is now as it was then of a low grade, requiring melting by the basic process. In the United States the tonnage of heavy steel scrap, which can be identified as having come from basic furnaces originally, is so large that steel foundries can run entirely on scrap railroad couplers, or knuckles, or other selected material, so that a good grade of steel can be melted in and taken from acid electric furnaces. But with the Bosshardt open-hearth furnace, unselected scrap of a grade impossible for electric furnace practice can be reduced



Special Steel Castings for Water Turbines. These are of unusually thin section and complicated design

castings, as is the usual practice in the United States. It should be observed that there are two Bosshardt furnaces side by side, the two tapping spouts being visible at the right, one behind the other.

Some of the Products

To appreciate properly the remarkable quality of the castings produced by the Bosshardt furnace, it should be noted that the Berlin company had no steel foundry previous to the installation of these furnaces, and that its output of steel castings has been built up of the most difficult types of castings, made of special steel of accurate analysis. The illustrations show, therefore, representative pieces from the ordinary production. The percentage of good castings per ton of metal melted is just about the same as the average steel foundry making castings of the same average weight and of much less average difficulty.

The ribbed and cored disks shown are water wheel and pump parts. The flywheel with its heavy rim and extremely thin, curved arms, is successfully made by Mr. Bosshardt by the use of small steel chills put against the fillets where the arms join the rim. These cause the arms to solidify in time to draw on the rim while the metal in the latter is still very soft, and so no cracks occur at these points where the thin sections join the heavy mass, and the castings are regularly successful.

The hollow casting shown in another illustration, with the numerous cored openings, is about 42 in. long. There are three separate chambers in the interior, and all must be perfectly steam-tight. The pressures to which the chambers are respectively tested are 2400, 960 and 360 lb. per sq. in. The piece weighs 2100 lb. and looks to be well worth the price of 22½c. per lb., which, of course, includes a large margin of profit to the foundry.

Other pieces include a motor truck transmission and axle case and a crank case for a Diesel motor. The

to any desired carbon content, degasified, and tapped at a temperature that will pour the thinnest of sections, and at a considerable decrease in cost.

The Inventor a Swiss

Edwin Bosshardt, the inventor of the furnace, was apprenticed as a half-grown boy to a large Swiss machine works. When he completed the term he followed the impulse to travel and see other countries—an impulse which seems to be irresistible to the majority of Swiss. He worked successively in one city after another in France, Spain, Belgium and Germany, wherever his command of the two languages which every Swiss possesses would serve him.

In 1907 he was working to perfect a tilting open-hearth furnace for melting steel, but it proved a failure and cost him his entire savings up to that time. Later he conceived the idea of the combination of coal gas producers and ports and constructed such a furnace at the Sulzer Works in Winterthur, Switzerland. This proved successful in producing steel of high quality and very hot, but the coal consumption was large and the life of the furnace shorter than the average.

The next Bosshardt furnaces were constructed at the Dingler works, about the beginning of the World War, and these comprised the features that appear in the first Bosshardt patent in the United States Patent Office. Further development was stopped by the war and post-war conditions in Europe, so that no new furnaces were constructed until about two years ago.

At that time Mr. Bosshardt read a paper before a convention of steel works engineers in Germany, at which Dr. Conrad Mathesius, a professor at the Charlottenburg Technical School, was present. Dr. Mathesius perceived the possibilities of development and brought the furnace to the attention of Director Jonas of the Berlin company. Director Jonas was formerly with the Koppel company, and was the man who took responsible charge of the planning and construction of

the American works of the Arthur Koppel Co., built by Dodge & Day (now Day & Zimmerman) of Philadelphia.

The Berlin company made arrangements with Mr. Bosshardt to put in two of his furnaces and go into the manufacture of steel castings. By improvements made at this plant the cost of operation of the furnaces has been reduced to a point at which the electric furnace cannot compete, while the refining effect of the Bosshardt unit enables the foundry to produce, besides castings that are impossible in anything less fluid than malleable iron, special alloy steel with analyses working to within less than half the usual tolerance limits required in the United States market, forging billets of such special alloy steel, and electric motor castings with such high magnetic capacity that the weight can be considerably reduced.

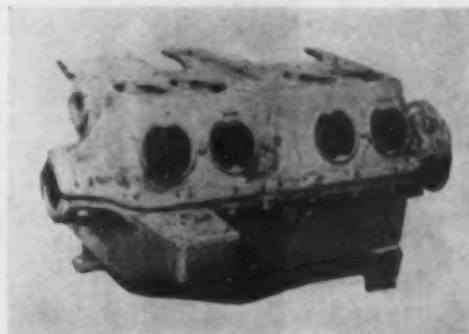
February Automobile Production

Production of automobiles in February showed a considerable increase over the January totals, being reported at 252,785 passenger cars and 34,234 trucks, compared with 212,909 passenger cars and 28,041 trucks in January, according to figures of the Department of Commerce. Of the February totals 242,006 passenger cars and 32,566 trucks were produced in the United States and 10,779 passenger cars and 1665 trucks in Canada. The American production of passenger cars is the greatest since October and of trucks the greatest since last May. The Canadian production of passenger cars is the greatest since last May, while of trucks it is the greatest since December.

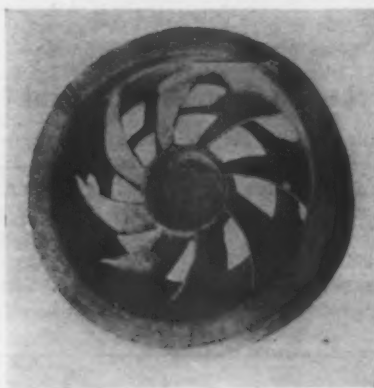
Present figures may be compared with those of February, 1924, in which the total number of passenger



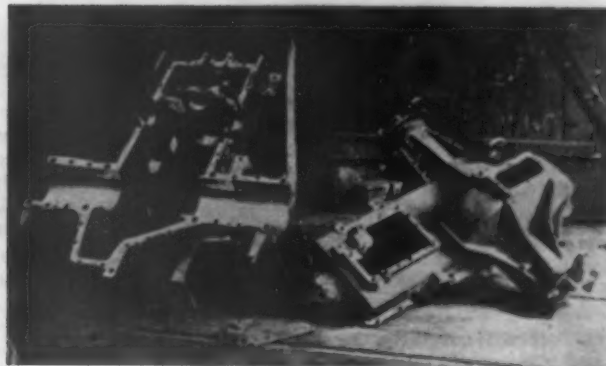
Hollow Steel Casting (Left) With Three Chambers to Withstand Steam Pressure



Oil Engine Frame, About $\frac{1}{4}$ In. Thick, Cast in Steel (Right)



Fly Wheel With Rim $2\frac{1}{4}$ In. Thick and With Arms Less Than $\frac{1}{4}$ In. Thick, Cast With No Cracks



Steel Casting for Motor Truck Differential Axle and Gear Shift Case

The Berlin Company for Iron Casting & Machine Construction has been able to develop a steel casting business, without previous experience, to a point at which they have four months' business under order, practically all of special, difficult type, naturally at extra prices and with extra large profit. The company is making steel castings to replace bronze castings at a saving in weight and cost. It is making a large number of hollow castings for steam valves and hydraulic systems, to withstand high pressures without leakage. The number of motor frame castings ordered from this foundry is increasing rapidly.

The fact that this steel foundry can be run at a large profit on castings of difficult types only, without the usual mass of simple pieces to carry the overhead and average down the usual heavy percentage of loss from trying to pour difficult shapes with steel insufficiently hot, is the best proof of the successful operation of the Bosshardt furnace.

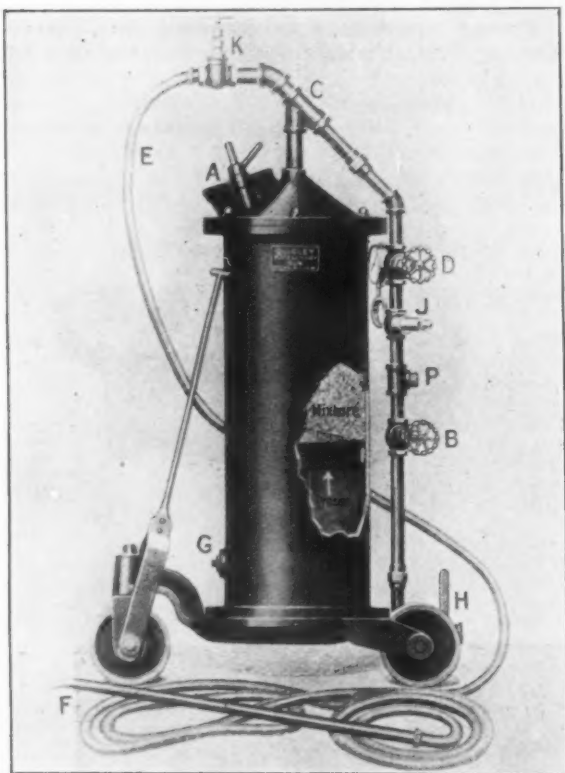
cars produced was 343,444 and of trucks 32,805. It will be noted that there was a loss of more than 90,000 in passenger cars, accompanied by a slight gain in number of trucks produced. The figures of last year included 331,372 passenger cars and 31,150 trucks produced in the United States, and 12,072 passenger cars and 1655 trucks in Canada.

E. E. Baker, president Kewanee Boiler Co., Kewanee, Ill., has turned over property amounting to \$400,000 for public purposes. The income, amounting to \$30,000 a year, will be expended under the direction of a corporation, not for profit, organized solely to administer the income. The funds will be used principally for three purposes—development of Kewanee's park system, assistance for crippled children and aid to boys in educational work. Mr. Baker had previously given over \$50,000 in cash to Kewanee's parks.

Refractory Gun for Rapid Repairing of Furnace Walls

The rapid relining, patching or surfacing of furnace walls, with savings in labor, time and material over former methods of repair, are claimed for the refractory gun here illustrated. The device also permits of quick repairs or hot patching of furnace walls or baffles in places not easily reached by hand patching methods.

Pre-mixed refractory material is placed in the gun, which is operated by compressed air. The nozzle is



Pre-Mixed Refractory Material Is Placed in the Gun, the Nozzle of Which Is Pointed to the Place to Be Repaired. A saving in time and material in the repair of furnace walls is claimed.

then pointed at the place to be repaired and the operator, by handling the valve controls, causes the mixture to be forced from the gun through a section of hose to the nozzle where the repair man makes the application. The pressure required varies from 90 to 100 lb. per sq. in., depending upon the nature of the material.

The gun consists of a cast iron cylinder from which the material is forced by pressure applied to the piston. The pre-mixed plastic material is placed in the gun through the charging opening A at the top. Pressure is applied at the bottom of a piston, through pipe connection P, and controlled by valve B. As the piston rises, the mixture is forced into the Y-connection C, from which point it is carried through the hose to the nozzle by the combined pressure of the piston and pressure through the air control valve D. A drain plug G is provided just above the piston and a quick-opening cock for releasing the pressure under the piston at H. When the gun is emptied the cock H is opened, and the piston returns to its former position. The gun is then ready for refilling. A pressure gage and pop safety valve are provided, as shown at J. The device, which is a recent product of the Quigley Furnace Specialties Co., 26 Cortlandt Street, New York, has a capacity of 2 cu. ft. of mixed material. It is mounted on three wheels for convenient removal about the plant. When not required for furnace repair work the gun may be used for rough white-washing, spraying paint or handling plastic mixtures such as stucco.

Commission Issues Order to Protect Brown & Sharpe Trade Mark

WASHINGTON, March 24.—The Federal Trade Commission announced last week that the Sandow Tool Co., New York manufacturer of electric lighting fixtures and various machinists' small tools, has agreed with it to the issuance of a cease and desist order which provides for the discontinuance by the company of the alleged practice of using the trade mark or brand "B & S." The commission declared that this trade mark had been stamped in a manner and style identical with the trade name or symbol used by the Brown & Sharpe Mfg. Co., which has for many years used these letters as a trade mark to identify tools and steel rulers manufactured by it and sold throughout the United States. The commission said it was found that "respondent used such legend without the consent of the Brown & Sharpe Mfg. Co. The effect of such practice is to make prospective purchasers believe that they are purchasing steel rulers manufactured by Brown & Sharpe Mfg. Co., when such is not the case."

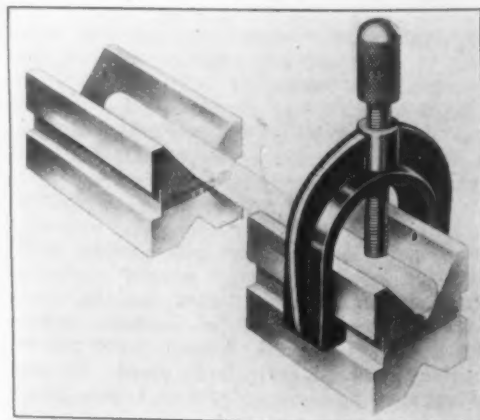
Data on Railroad Operation

A 44-page annual bulletin for 1924 has been issued by the Car Service Division of the American Railway Association, Washington. This gives operating results week by week during the last five calendar years and is illustrated with numerous diagrams showing the car loadings of products of various descriptions, together with diagrams and statistical details of car movements, repairs and a considerable number of production items of basic products which have to be moved directly by railroads. These include lumber, coal and coke, iron and steel, automobiles, live stock and the principal grains and fruits, as well as petroleum and its distillates.

Vee-Blocks and Clamp for General Use

The Vee-blocks and clamp illustrated are a recent addition to the line of the Brown & Sharpe Mfg. Co., Providence, and are intended for holding circular pieces to be drilled, milled or ground. They serve to hold the piece firmly and prevent its turning or slipping while the work is being done.

The blocks are made of cast iron, are finished carefully and the grooves are accurate. Each block is 2 in.



Circular Work Is Held Firmly While Being Machined

long and 1½ in. square and will take work up to 1½ in. in diameter. The clamp is ribbed as shown, and the screw is provided with a knurled head in which there is a hole for inserting a rod for tightening the screw on the work. The blocks and clamp are designated as the No. 749. Extra clamps may be provided, but the blocks are not available singly.

Metals Committees of the Testing Society

Largely Attended Sessions in Philadelphia Develop
New Steel Specifications and Prepare for
June Meeting

METALS COMMITTEE WEEK of the American Society for Testing Materials has assumed the proportions of a small technical convention. A registered attendance of 234 members of 11 different specifications-making committees at the three-day meeting last week in Philadelphia, March 18 to 20, demonstrates the importance of the occasion.

The custom for several years has been for each committee to meet at various dates and places suited to the majority of the members. Last year the executive committee of the society inaugurated the plan of gathering the principal committees of the metals section in one general meeting. The first of these was held in Pittsburgh last year. The success of that meeting, at which 175 were registered, was enough to warrant another trial. The second meeting took place in Washington last October at which 140 members of the same committees were present.

The meeting last week was the most successful of the three and insures a regular continuance. They were the last meetings previous to the annual convention, which meets at Atlantic City, June 22 to 26. Simultaneous sessions on the three days were held in the Bellevue-Stratford Hotel.

Special Addresses and Entertainment

The luncheon and dinners on each day, in a special room, served as a general meeting place for a majority of the members. At several of them addresses were made by men of prominence. At the dinner Wednesday evening Vice-President W. H. Fulweiler presided. Several committee chairmen described the work of their committees, and C. L. Warwick, secretary-treasurer of the society, discussed certain recent developments. George W. H. Hicks, secretary of the Sesqui Centennial Association, described plans for the celebration in Philadelphia in 1926.

At a luncheon previous to a trip of inspection of the new Delaware River bridge, Thursday afternoon, Clement E. Chase, principal assistant engineer of the bridge commission, delivered an interesting talk on the various steels entering into the bridge and on some of the methods of construction. At the luncheon on Friday, March 20, the delegates were addressed by Dr. Carl Benedicks, director of the Metallographic Institute, Stockholm, Sweden. President F. M. Farmer presided at the luncheon and introduced Dr. Benedicks, who referred in a very interesting way to several of the problems with which he is connected, particularly the analysis of martensite and an explanation of the absence of thermal expansion in invar metal.

The local committee in charge of the meetings and entertainment were: G. H. Clamer, chairman, president Ajax Metal Co.; C. E. Chase, Delaware River Bridge joint commission; R. E. Hess, assistant secretary, and J. K. Rittenhouse, assistant treasurer, A. S. T. M.; R. P. Johnson, Baldwin Locomotive Works, and N. L. Mochel, Westinghouse Electric & Mfg. Co. A few of the important matters transacted by some of the committees are as follows:

New Work of the Committees

A largely attended meeting of committee A-1 on steel was held Friday morning, March 21, with F. M. Waring, engineer of tests, Pennsylvania Railroad, Altoona, Pa., in the chair. The committee thoroughly reviewed the work of its various sub-committees during the past year, some of the outstanding features of which are the following:

Steel for High Temperatures

Speaking for sub-committee XXII on pipe flanges and fittings, V. T. Malcolm, metallurgist Chapman Valve Mfg. Co., Indian Orchard, Mass., asserted that

there is probably no more important subject before the committee today than this. Designers of power plants are turning more and more to the use of high temperatures and pressures, which makes imperative the development of specifications covering the materials that are to be subjected to this severe service. He also emphasized the large amount of work which his committee had done during the past year, and presented specifications which had been drawn up covering carbon steel castings and alloy steel bolting for this service. These were adopted by a vote of committee A-1 as proposed tentative standards for submission to letter ballot of the committee, and, if they are passed, they will go before the society at its annual meeting in June.

In tentatively adopting these two specifications it was realized that they were the result of considerable work and discussion in the sub-committee and that they are not considered the final word on the subject. They are, however, being passed through so as to get them before the society, and before outside associated interests, to stimulate discussion to the end that constructive criticism may be made.

Structural Silicon Steel

An interesting development was the submission of proposed tentative specifications for structural silicon steel, so-called, by sub-committee 2 on structural steel, offered by the chairman, A. W. Carpenter, assistant valuation engineer, New York Central Railroad, New York. It was pointed out that the use of silicon steel has reached a point that justifies the publication of specifications and, after considerable discussion, the specifications were accepted by the committee and will be submitted to the society in June for adoption as tentative.

Corrosion of Metal Coated Products

Committee A-5 on corrosion of iron and steel held a well-attended meeting with 32 members and visitors present. In the absence of the chairman, J. H. Gibboney, chemist Norfolk & Western Railway, Roanoke, Va., H. E. Smith, engineer of tests, New York Central Railroad, New York, presided. The committee received a comprehensive report from its sub-committee VIII on field tests of metallic coatings, presented by its chairman, F. A. Hull, chemist General Electric Co., Schenectady, N. Y.

Within recent years much attention has been paid to the coating of iron and steel with various non-ferrous metals such as zinc, lead, tin and copper. There has been a growing demand for authentic comparative data on the relative resistance of various metallic coatings to corrosion under various media, such as atmospheric corrosion and corrosion under various kinds of water. Since the annual meeting of the society last June this sub-committee has been diligently at work in planning these tests on metallic coated products.

At the meeting last week a program was adopted which involves the following main features: 1. Exposure of material to be tested at five strategic localities. 2. Chemical and physical analysis of samples of the materials exposed. 3. A study of accelerated corrosion tests with the object of finding that method which will most nearly check long-time exposure results, and applying such method as a parallel series of tests on the metallic coated products to be subjected to atmospheric exposure. The products to be used are galvanized sheets, galvanized wire, galvanized fencing, structural shapes, hardware, pole line material, tubes, castings and lead andterne plates.

Ferroalloy Specifications

Committee A-9 on ferroalloys, Dr. F. C. Langenberg, metallurgist Watertown Arsenal, Watertown,

Mass., chairman, held an interesting meeting at which was discussed the committee's efforts during the past year to develop methods of sampling and analysis of various ferroalloys, and the formulation of specifications. On account of the relative expense of such alloys the importance of accurate sampling and analysis as a basis for payment was emphasized. At its meeting the committee received the reports of several sub-committees and voted to recommend to the society in June, for publication as tentative, specifications and methods of chemical analysis for ferrosilicon, ferromanganese, ferrochromium and ferrovanadium, as well as for tungsten powder. Substantial progress was reported in the work on development of methods for sampling.

Stronger Ship Steel

For sub-committee III on ship steel, Capt. T. G. Roberts, of the Bureau of Construction and Repair, U. S. Navy, reported that the committee has agreed on requirements for specifications for marine boiler steel which had been referred to certain departments of the Government for review. He also stated that consideration was being given to the recommendation that tensile strength of ship steel be changed from a range of 58,000 to 68,000 lb. per sq. in., as in the present specifications, to a range of 60,000 to 72,000 lb. per sq. in.

The Cast Iron Test Bar

Dr. Richard Moldenke presided at a meeting of committee A-3 on cast iron, Thursday morning, March 19, and reported the results of his recent visit to England, France, and Germany during which he made a study of international methods of testing cast iron in various forms. He reported that Germany has adopted a revised test bar for cast iron which is 1.2 in. in diameter and tested on 18-in. supports. This bar is one of three standard test bars in England. It has been approved also by a committee of the American Foundrymen's Association with which committee A-3 has been cooperating.

Committee A-3 voted to adopt this revised test bar in place of the present standard arbitration bar and will recommend that it be accepted as tentative at the annual meeting of the society. Being tested over 18 in. instead of 12-in. supports the new bar is more sensitive and gives more information on the elasticity of iron than does the present bar, it was pointed out. It is anticipated that international agreement on this revised bar is now in sight.

The committee is also engaged in a revision of the methods of chemical analysis of cast iron upon which substantial progress will be reported at the annual meeting. In connection with the matter of specifications for pig iron, the committee plans a study and tabulation of existing practice in the use of various compositions of pig iron for different grades of castings.

Heat Treatment of Iron and Steel

Committee A-4 on heat treatment of iron and steel has adopted and will propose to the society at its annual meeting in June an extensive revision of the society's recommended practice for the heat treatment of case-hardened carbon steel objects. The present recommended practice has stood without change for about 10 years and the revision has taken the form of a re-writing of the recommended practice. Particular attention has been paid to the details of procedure and the precautions to be observed.

Some time ago definitions of terms relating to heat treatment, tentatively prepared by the American Society for Steel Treating, were referred by that society to the A. S. T. M. for review. This review has taken the form of a critical study of the definitions by committee A-4, and, at the meeting last week, a report was adopted for transmission to the A. S. S. T., commenting on these definitions. The committee has recommended to the executive committee of the society the formation of a joint committee of the A. S. S. T., the A. S. T. M. and the Society of Automotive Engineers for the preparation of a series of standard definitions of terms relating to heat treatment. This

recommendation will be acted upon by the executive committee next month.

Other committees which held meetings during the week and reported substantial progress were committee A-2 on wrought iron, sub-committee of committee E-1 on impact testing, committee D-14 on screen wire cloth, committee E-4 on metallography, committee B-1 on copper wire, committee B-3 on corrosion of non-ferrous metals and alloys, and committee B-2 on non-ferrous metals and alloys.

Joint Research on Metals at High Temperatures

An interesting meeting was that of the joint research committee on the effect of temperature on the properties of metal of which G. W. Saathoff, chief construction engineer Henry L. Doherty & Co., New York, is the chairman. The committee is a joint one of the A. S. T. M. and the American Society of Mechanical Engineers, which was formed at the joint meeting of these two societies in Cleveland in May, 1924. Other members of the committee are G. K. Elliott, Lunkenheimer Co., Cincinnati; H. J. French, U. S. Bureau of Standards, Washington; J. B. Johnson, chief material section, Air Service, McCook Field, Dayton, Ohio; V. T. Malcom, metallurgist Chapman Valve Mfg. Co., Indian Orchard, Mass.; Dr. J. A. Mathews, vice-president Crucible Steel Co. of America, New York, and L. W. Spring, chief chemist and metallurgist Crane Co., Chicago.

This committee has three objects: 1. Accumulation of existing unpublished data covering satisfactory and unsatisfactory service in different fields of engineering of various materials under high temperatures, 2. The making of studies leading to standardization of the procedure for testing materials at high and low temperatures, and 3. Outlining and fostering new research work in this field. Among the most important materials to be investigated are carbon and alloy steels, so-called heat-resisting alloys, and trimming materials for valves and equipment intended for high temperature service in power stations, oil refineries, etc. At the meeting last week the joint committee discussed the details of their test program and methods of financing the committee's work. The cooperation of a number of laboratories in conducting the tests will be invited.

These general meetings of the metals section have been so successful that the committees of the non-metals section are holding a similar series this week in Philadelphia.

Coal Production Declines

The National Association of Purchasing Agents reports that the production of bituminous coal declined almost 13,000,000 net tons for the month of February. The total production in the bituminous fields was estimated at 38,963,000 net tons in comparison with 51,357,000 for January. The production of anthracite also declined 224,000 net tons for the month, the total being estimated at 7,176,000 net tons. The total of both classes of coal mined is estimated at 46,139,000 net tons, according to the U. S. Geological Survey report for the month. This is much less than February, 1923 and 1924, when 50,064,000 and 53,355,000 net tons respectively were estimated to have been mined. February, 1924, however, contained 29 days.

Consumption of coal in industry, not including heating, is estimated at 35,227,000 net tons, a decrease of 6,918,000, compared with January's industrial figure of 42,145,000. Much of this decrease was to be expected on account of the unusually short month and the two holidays—Lincoln's and Washington's birthday anniversaries. However, the average daily consumption in industry was less than the daily consumption in January by approximately 100,000 net tons, and was also less than February's figures in either 1923 or 1924.

The Minnesota Steel Co., Duluth, Minn., is about to roll a new product, a round steel billet from which seamless steel tubing will be manufactured. The billets are to be shipped from Duluth to the Gary Tube Co., Gary, Ind., where they will be made into tubing by the piercing process.

MARCH INDICATIONS OF THE BUSINESS TREND

Favorable Factors

(1) Retail trade holds at a fairly high level and is large in comparison with wholesale trade.

(2) Business failures though abnormally numerous, decreased slightly.

(3) The efficiency of labor shows improvement. Production has increased more rapidly than employment.

(4) On the whole, February data concerning employment and earnings received thus far are favorable. Employment increased in New York, Pennsylvania and Illinois. Average weekly earnings appear to have increased slightly.

(5) Money and credit continue relatively easy.

Unfavorable Developments

(1) The main forecasting line, "the P-V line*," moved downward moderately in February for the second successive month.

(2) A decline in commodity prices occurred, coupled with overproduction of certain basic commodities.

(3) Stocks of basic commodities are large and growing, with production running ahead of shipments in important lines.

(4) The index of new business enterprises moved downward sharply, indicating less optimism.

(5) Exports declined and indicate the resumption of a downward trend.

Indications favor the forecast of a condition of irregularity in business without much trend during the next two or three months, to be followed by a moderate recession.

BY DR. LEWIS H. HANEY

Director, New York University Bureau of Business Research

The General Outlook

THE recent sharp setback in the grain and stock markets suggests the timeliness of an appraisal of business fundamentals.

The conditions which generally prevail just before a real business crisis develops are somewhat as follows: Bank reserves are low and money rates are high. One or more of several maladjustments in business are found, among which the following may be mentioned: (a) Maladjustment in the prices of various commodities, (b) Prices out of line with money wages, (c) Funds inadequate for an expanded volume of business, (d) Wholesale trade too great in comparison with retail trade, (e) Production in basic industries too great in comparison with sales. Speculative buying of merchandise is also likely to exist. Often labor shortage is found, and transportation facilities are frequently overburdened. Finally, stocks of commodities are large and growing, while unfilled orders are generally declining and cancellations are often common.

At present most of the foregoing dangerous symptoms are

*The P-V line, showing ratio of commodity prices to volume of commodities, was explained on page 23, THE IRON AGE, Jan. 1, 1925.

lacking. Money and credit may be said to be abundant and interest rates are not high. There has recently been less maladjustment in prices than has existed for some time. Retail trade has held up considerably better than wholesale trade. There is still unemployment instead of labor shortage; and the transportation machine is working with unusual adequacy.

But it must be recognized that at a few points the symptoms of an unsound industrial situation may be found. Among the chief of these may be mentioned the following:

(1) Speculative excesses in grain, wool, and securities.

(2) Overproduction in a number of important industries, including iron and copper.

(3) Stocks of basic commodities in first hands are large and growing.

The net conclusion from this brief survey is that conditions are not such as to indicate the probability of any major business recession, but that some recession is in order within a few months. Some readjustment in the speculative position is required to correct the excesses referred to, and some curtailment in production must occur in order to allow the liquidation of accumulated stocks.

Recent developments on the

stock exchange and the Chicago Board of Trade seem to mark the end of any immediate danger from an inflationary boom. It was in the belief that such a boom might develop that stocks have been "bulled" excessively. Evidently speculators have been forced to admit that they had overdiscounted the anticipated "improvement in business." It is also apparent that grain prices are not going to starvation levels, and, therefore, the food cost of living will probably not become the menace which appeared possible.

As to the accumulation of commodity stocks to which reference has been made, attention is called to the trend of the index compiled by the Department of Commerce covering 45 commodities. The figures shown are index numbers based on the average for 1921 as 100. They are as of the end of the month.

Commodity Stocks, Per Cent of Average for 1921

Jan. 31, 1924.....	98.6
July 31.....	94.9
Aug. 31.....	97.1
Sept. 30.....	98.5
Oct. 31.....	99.3
Nov. 30.....	97.8
Dec. 31.....	105
Jan. 31, 1925.....	112.2

These figures indicate that there was little liquidation in 1924, and that, as a whole, commodity stocks are large.

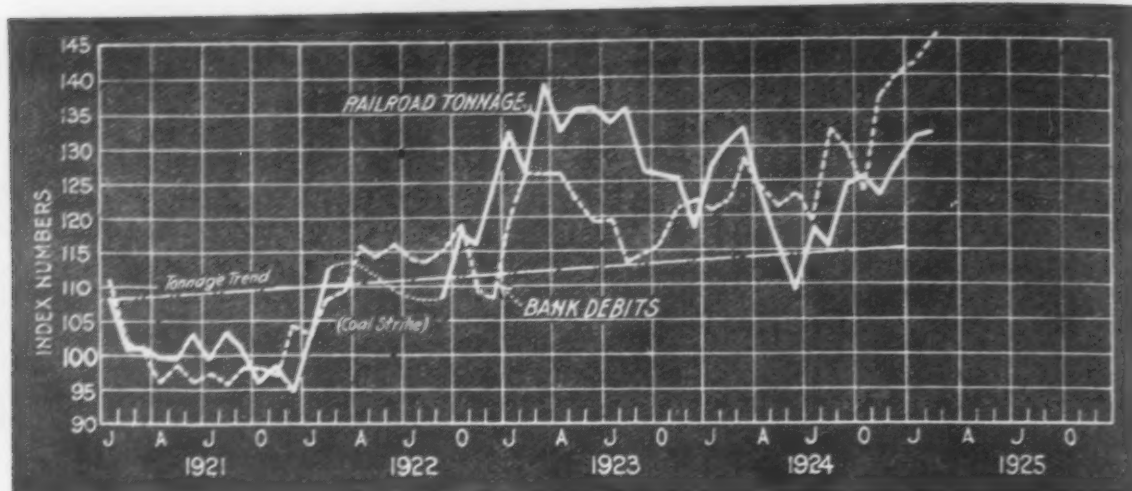


Fig. 1. The Business Cycle: Railroad Traffic and Bank Debits

The railroad tonnage curve is based on the car loadings and tons per car of Class 1 railroads and is adjusted for seasonal variation. The trend line shows the rate of the average monthly growth during the last ten years. The bank debits curve is the monthly average of total bank debts adjusted for seasonal variation. The curves are based on index numbers, with the monthly average for 1921 as 100

The Business Cycle

THE movement of the two general indexes of the business cycle, shown in Fig. 1, indicates clearly that in February the existing trend of industry and trade was still upward. It is this general upswing which the stock market was discounting at the end of last year.

Bank debits, showing the volume of checks drawn, attained a record level in February. The average weekly figure was a little lower than in the preceding three months, but a decrease is normal in February and, after making allowance for the seasonal variation, the adjusted index rose sharply, as appears in the graph. Bank debits were undoubtedly influenced by speculative activity in the stock and produce markets, but retail trade moved up considerably in February, and when the records

are in for wholesale sales it will probably be found that they also advanced.

The tonnage hauled by the railroads in February was nearly as great as that attained at the peak of 1924, but was considerably less than at the high point of 1923. Railroad tonnage gives a truer picture of the volume of industrial activity than do bank debits. The curve shows that while tonnage increased in February, the increase was at a slower rate than in the months immediately preceding. This fact suggests that the tonnage figure may be nearing a peak.

It is noticeable that the increase in bank debits has been much greater than that in railroad traffic. A logical inference from this fact would be that the volume of checks drawn has been running ahead of shipments a little too fast, possibly indicating an undue speculative development. At least caution as regards future commitments is indicated.

Business Failures and New Enterprises

FIG. 2 shows the trend of the number of business failures and of the capitalization of new enterprises incorporated during recent years. These indexes are valuable as indicating the position of business in the cycle and they also have the same barometric significance concerning the immediate future.

On the whole, as might be expected, failures and new enterprises vary in the opposite direction. At the present time, however, the trend of failures is slightly downward (a favorable indication), while the trend of new business enterprises is sharply downward (an unfavorable indication). In a word, a mixed condition and irregularity are suggested.

The number of business failures is slightly above normal and

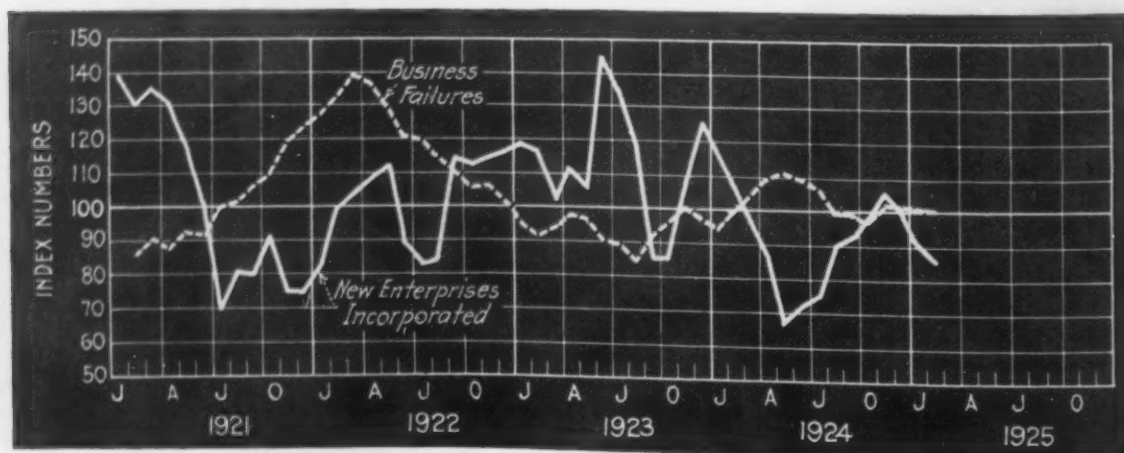


Fig. 2. Business Failures and New Enterprises



Fig. 3. Steel Barometers: Unfilled Orders and Scrap Price

The unfilled orders curve represents changes in unfilled orders, allowing for seasonal variation. A rise in the curve may indicate either a smaller decrease or a larger increase than occurred in the preceding month. The scrap price is that of heavy melting steel scrap at Pittsburgh, as reported in *THE IRON AGE*.

the decline in the number of such failures is not pronounced. But it is reassuring that a fairly stable condition exists at a level which is much below the crisis peaks of 1922 and 1924.

The decline in new business enterprises strongly indicates the recent setback in the optimism of business men. The trend of this index has now been downward for three months in succession. It gave an early warning of the need for a readjustment in the over-optimistic ideas which prevailed at the end of the past year.

Steel Barometer: Unfilled Orders and Scrap Prices

FIG. 3 shows two of the most sensitive barometers of the iron and steel industry. As the iron and steel industry occupies a fundamental position, these barometers are highly significant for the general business situation.

There has been a rather drastic decline in the market for steel scrap and as usual this decline gave an early indication of the general weakening in the iron and steel price structure. If conditions run true to past form, the continued weakness of the scrap market means that further declines in the iron and steel markets are probable.

The rate of change in the unfilled orders of the United States Steel Corporation, which is graphed in Fig. 3, showed a small gain in February. In spite of this gain, however, the general trend may still be downward. While not at all certain, we are inclined to think that such is the case. In the past this index when declining has generally meant a downward trend

in demand and has been followed by decline in steel production.

In short, both of these sensitive barometers continue to suggest a rather unfavorable conclusion concerning the immediate position of the iron and steel industry.

Bookings of Steel Products

THE indexes shown in Fig. 4 are important because they are sensitive to changes in the demand for steel. The curves indicate that the peak of steel demand, as reflected in bookings of castings, structural material, and fabricated plates, was reached in December.

The index for commercial steel castings shows a decline of 36 per cent during January and February. Bookings are still at a relatively high level, however.

The index of structural steel sales shows a slight gain, after two months during which they declined. The November peak was followed by a slight decline in December, but sales in January fell to a point lower than at any time during 1924. In view of the unusually sharp decline in January, and the low level which structural sales reached in that month, the small February increase is hardly to be taken as a turn for the better. Not much strength in the demand for structural steel is to be expected during the next few months.

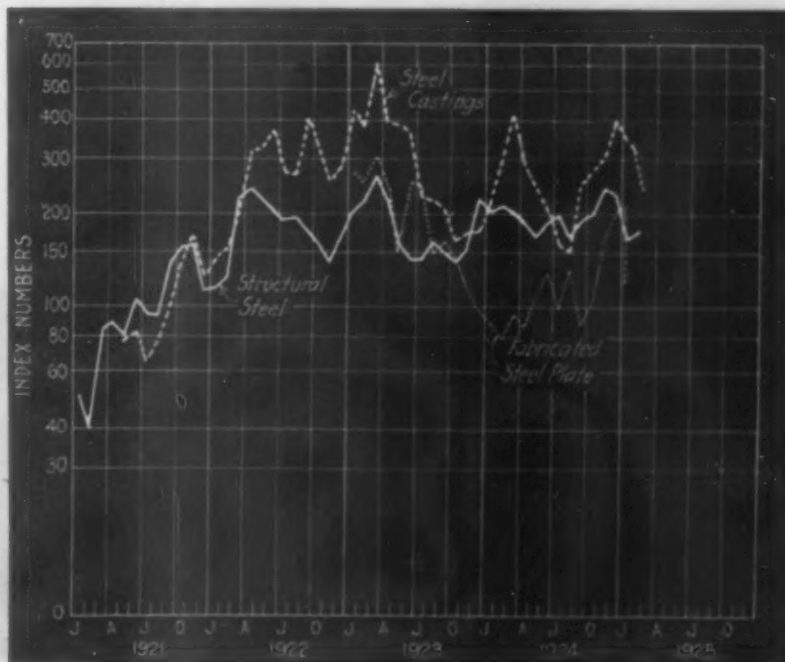


Fig. 4. Bookings of Structural Steel and Steel Castings

The curves represent the movement of index numbers referred to the average for 1921 as 100. The index numbers are based on data recorded by the Department of Commerce and are not adjusted for seasonal variation.

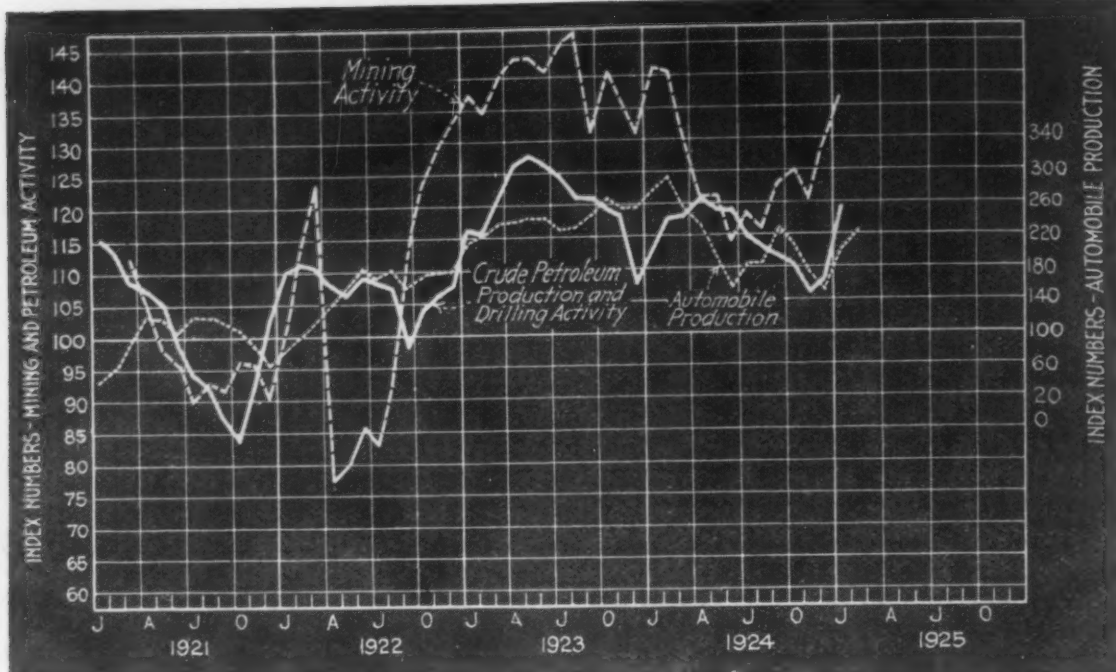


Fig. 5. Automobile, Petroleum and Mining Activity

The petroleum curve is the average of the monthly production reported by the U. S. Geological Survey and drilling activity as reported by the *Oil City Derrick*, each adjusted for seasonal variation. The automobile curve shows the monthly production of all cars and trucks and adjustment is made for seasonal variation. The mining production curve is as reported by Harvard University and is adjusted for seasonal variation. All figures are index numbers based on the 1921 average

In this issue we are showing for the first time the newly compiled figures of the Department of Commerce on fabricated steel plate bookings. January business shows a falling off of 41 per cent from that of December, the peak month of last year.

Automobile, Petroleum and Mining Industries

IN Fig. 5 are shown the latest data indicating the trend of three industries which are large consumers of steel. All of these industries were moving upward at the end, a fact which is the more significant in that allowance has been made in each case for the usual seasonal variation.

January showed a considerable increase in the production of petroleum in excess of the normal seasonal change; and drilling activity, although not especially great in January, has recently shown considerable expansion. Accordingly, the demand for oil country goods should be fairly active.

Mining activity increased rather sharply in January, which is the latest month for which complete data are available. In February, however, coal mining activity fell off decidedly and it is possible that the rise in the composite index may be checked. Nevertheless, indications favor a fair demand from the mining industry.

The index of automobile production shows an increase considerably greater than usual for the season, suggesting that the re-

quirements of the automobile manufacturers are increasing.

Building Activity and Money Rates

AMONG the industries which are large consumers of steel, the building industry probably makes the least favorable showing. Contemplated new construction in February was above that of a year ago, but, after making allowance for seasonal variation, it remained about the same as in January. It is noteworthy that the volume of contemplated construction was maintained largely by plans for public works and utilities.

Building contracts actually awarded, in terms of square feet

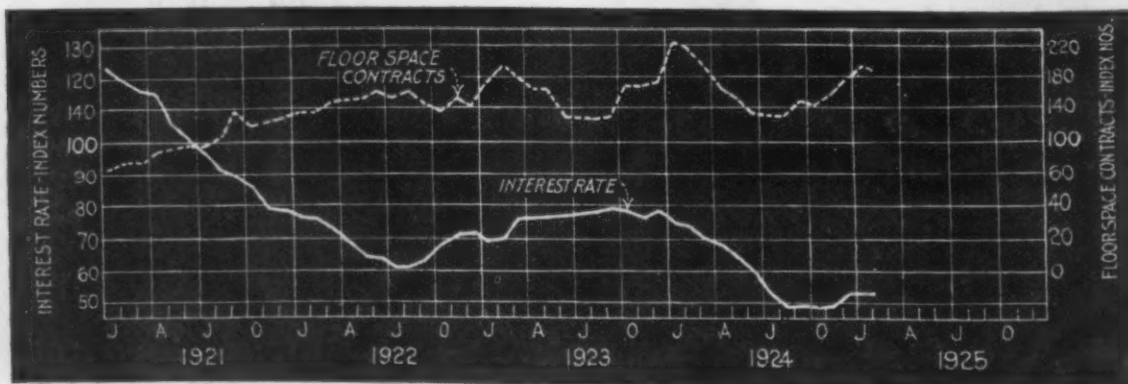


Fig. 6. Interest Rate and Building Activity

The curve of building activity is based on the number of square feet of floor space in building contracts awarded, as reported by the F. W. Dodge Corporation. Seasonal variation is eliminated. The interest rate curve is the monthly average of rates on best commercial paper, adjusted for seasonal variation

In This Issue

Pig iron as a business barometer.—Statisticians recommend use of pig iron output figures as a business index, instead of percentage of furnaces in blast, because furnace capacities are not uniform.—Page 896.

Labor cost sharply reduced by pulverized coal installation.—One man can care for three times the number of coal-fired annealing furnaces now requiring five men. Fuel cost also reduced, as pulverizing permits use of cheaper coal.—Page 888.

To improve aluminum.—British metallurgists suggest that aluminum or aluminum alloys be permitted to cool solid in the crucible and then remelted slowly for pouring, to reduce gas and pin-holing.—Page 895.

Sharp gain in automotive output.—February total was 287,019 cars and trucks, a gain of 19 per cent over January.—Page 903.

Copper-nickel alloy has excellent properties.—Deoxidized copper, containing 1.5 per cent nickel, withstands severe heat without "gassing." Improved strength, hardness and high ductility, without brittleness, recommend it for engineering work.—Page 944.

High quality steel castings made in special open-hearth furnace.—German manufacturer produces difficult type, finely made steel castings in new design of small open-hearth furnace, which develops super-temperature at low fuel cost.—Page 901.

Steel Corporation's annual business.—One and one-quarter billion dollars is total value of business transacted by all units of the Corporation in 1924, about 24 per cent under 1923.—Page 892.

Forecasts irregular business.—"Indications favor the forecast of a condition of irregularity in business without much trend during the next two or three months, to be followed by a moderate recession," says Dr. Haney.—Page 907.

Switchboard lights tell when coal bins are empty.—Complete remote control system is feature of coal pulverizing plant installed in steel mill. Bins are filled by operating push buttons on control switchboard.—Page 885.

A. S. T. M. suggests new steel specifications.—Tentative specifications on pipe flanges and fittings for high temperatures and pressures, also on structural silicon steel, submitted by steel mittees.—Page 905.

Will interest rates go higher?—"The trend of interest rates is upward and is likely to continue so for two or three months," economist prophesies.—Page 913.

Hoover urges new patent code.—Will undertake to remove injustices existing in other countries toward American patentees and American manufacturers.—Page 945.

To prevent accidents.—The Steel Corporation spent almost two million dollars in 1924 in accident prevention and safety work.—Page 894.

Pig iron average annual output doubles in twenty-five years.—Statistical analysis reveals average is now above thirty million tons per year, which is more than twice the average at the beginning of the century.—Page 896.

Current steel production.—Steel output in March will show some curtailment from the daily average in January and February; meanwhile rather more irregularity is seen in prices.—Page 924.

Private controversies ruled out by Trade Commission.—Will not consider cases not affecting public and adjustable by court action. No complaints will be issued before the respondent has an opportunity to prove himself guiltless.—Page 919.

Employee stockholders increasing.—Investigation shows remarkable gain in stock ownership among industrial employees. Steel industry leads.—Page 899.

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of floor space, showed a considerable decrease in February. After adjustment for seasonal variation, the index declined from 192.7 per cent of the 1921 average to 187.4 per cent. The number of square feet of floor space in contracts awarded in the Februarys of recent years have been as follows:

	Sq. Ft. in Awards
February, 1921.....	16,800,000
February 1922.....	30,000,000
February, 1923.....	49,700,000
February, 1924.....	54,900,000
February, 1925.....	46,900,000

The total for the first two months of 1925 was 95,000,000 sq. ft. compared with 111,000,000 sq. ft. in the first two months of 1924. Clearly, as predicted by this department, building activity is fail-

ing to reach the peak attained in the past two years.

Business and industrial building activity fell rather sharply in February, although the first two months of the year are at about the same level as the first two months of 1924.

On the whole the trend of building activity appears to be downward. This is reflected in the fact that the demand for structural steel is not as great, as is shown in the decline of orders for fabricated structural steel (Fig. 4).

The rise in interest rates was checked in February due to some diminution in speculative activity. At the end of the month, however, commercial paper rates advanced

and the interest rate curve shown in Fig. 6 will undoubtedly advance in March.

The trend of interest rates is upward and is likely to continue so for two or three months longer. There is no indication, however, of anything but relatively easy money, with the best 60 to 90-day commercial paper advancing to 4½ or 4¾ per cent.

This condition should help maintain the demand for machinery and machine tools of all kinds, since, with a low interest rate as a basis, the capital value of the saving to be made by introducing new and improved equipment will continue to be large.

The Iron Age, March 26, 1925

Union Drawn Steel Co. Expands

Acquires Peerless Drawn Steel Co. and Standard Gauge Steel Co.
—Move Prompted by Abolition of Pittsburgh
as Sole Basing Point

ANNOUNCEMENT has been made of the acquisition by the Union Drawn Steel Co., Beaver Falls, Pa., of the Peerless Drawn Steel Co., Massillon, Ohio, and of the Standard Gauge Steel Co., Beaver Falls. Control of the latter company has been in the hands of those controlling the Union Drawn Steel Co. for some time, but it has been operated as a separate entity. The company a few months ago took over the Frasse Steel Works, Inc., at Hartford, Conn., and with the plants previously owned at Beaver Falls, Pa., Gary, Ind., and Hamilton, Ont., it now has seven works and from a geographical standpoint, now is in a very strong position to meet the added competition for business brought about by the abolition of Pittsburgh as a sole basing point on steel prices. Indeed, it was that development which prompted the opening of negotiations for the acquisition, first of the Frasse company and later of the Peerless and Standard companies. From its Eastern plant the company serves the New England, eastern New York, Atlantic seaboard, Pacific Coast and export demands. From Massillon it can easily reach the Cleveland and Detroit markets, while there is the Gary plant to serve the West, the Hamilton plant for Canadian business and the three works in Beaver Falls to take care of demands of the Pittsburgh territory and those of other districts when the occasion arises.

An interesting development of the new arrangement is that E. H. Birney, who has been president and general manager of the Peerless Drawn Steel Co., be-

comes vice-president, in charge of operations of the Union Drawn Steel Co. This is the only change in the official personnel of the company, which besides Mr. Birney is as follows: L. R. Davidson, chairman; E. S. Hoopes, president; George B. Mitchell, vice-president, in charge of sales; Herbert May, treasurer, and E. C. Rebeske, secretary.

It is proposed to transfer some of the equipment of the Standard Gauge Steel Co. to the upper plant of the Union Drawn Steel Co. and devote the former plant to the production of special shapes in cold-drawn steel. The Massillon plant will continue its present lines, specializing in alloy steels.

Judge Henry G. Wason, counsel and a director of the Union Drawn Steel Co., who made the announcement, says: "The primary object of this extension is to further fortify our position as the leader of the cold-drawn steel industry and give us mills most advantageously located to efficiently and economically serve the consuming trade. To a large extent the move was prompted by the recent abolition of the Pittsburgh plus plan of price quotation. It is in no sense an effort in the direction of controlling the cold-drawn business. The productive capacity of the country in round figures is 1,000,000 tons a year with a normal consumption very much less.

"The productive capacity was greatly expanded to meet war conditions and it will be some time, I fear, before the consumption will catch up to the mill."



E. H. BIRNEY, new vice-president in charge of operations Union Drawn Steel Co., has been the general manager of the Peerless Drawn Steel Co. since its organization. He has also been president since the death over a year ago of Fred H. Snyder. Prior to 1913, Mr. Birney was for 10 years with the Jones & Laughlin Steel Corporation South Side Works, Pittsburgh. He was successively assistant power engineer, superintendent of power department, assistant superintendent of rolling mills, and for four years was in full charge of the rolling mill department. Prior to his experience in Pittsburgh, he spent one year in the engineering department of the Republic Iron & Steel Co. at Youngstown. He is an alumnus of Case School of Applied Science, Cleveland, and also of Mt. Union College, Alliance, Ohio. He is a Mason, a Shriner of Al Koran Temple, Cleveland, and a member of the Detroit Athletic Club, Cleveland Athletic Club, Duquesne Club, Pittsburgh, Massillon Commercial Club and Brookside Country Club, Canton. Mr. Birney also is president the Massillon Steel Casting Co., the Massillon Steel Joist Co., vice-president the Reynolds Machine Co. and of the Ohio Banking & Trust Co., Massillon, treasurer of the Massillon City School District Library Board, and a member of the Massillon Chamber of Commerce.

ESTABLISHED 1855

THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON
C. S. BAUR, *General Advertising Manager*

GEORGE SMART

Member of the Audit Bureau of Circulations and of
Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

F. J. Frank, *President*

PRINTED IN U. S. A.

George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian

Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1.

Subscription Price: United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50; Foreign, \$12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, New York, under the Act of March 3, 1879.

Wall Street Readjustment

ANOTHER illustration of Wall Street's moods and tenses was given on Monday when the stocks of the steel companies declined from one to three points, ostensibly because the Bethlehem and Steel Corporation earnings for 1924, as published Monday morning, fell considerably below those for 1923. The fact is that, apart from some inconsequential adjustments, these earnings were known two months earlier. But at that time Wall Street, or a considerable part of it, was bent on convincing the public that stocks were due for further advances when the spring demand in all lines of business should show that 1925 was developing into a boom year. It is fair to say that the downward stock market movement of Monday was not due to any surprise at the steel company showings for 1924, but was traceable to the same causes that produced the reaction of the preceding week.

It was evident before the end of January that speculators in stocks and in wheat were becoming more influential in both those markets than were any new developments in industry or trade or any new information as to world supply and consumption of wheat in the coming six months. Thus both stocks and wheat were forced by speculative manipulation to higher prices than were warranted by the improvement that had been seen in actual business following the election or by any improvement that seemed likely to come in the months immediately ahead. The reaction of the past week is thus a reappraisal of market values in securities and in wheat which brings them more nearly in line with the facts in the situation. So far, therefore, the picture is not so much that of Wall Street in its familiar role of discounting what is to happen in business, as of Wall Street readjusting the ideas of some of its mistaken speculators to the more conservative basis on which manufacturers and merchants have conducted their buying and selling since the election.

LARGE as is the volume of railroad demand, it is not unlike the hand-to-mouth buying that has been so general in the many months in which the

market has been in buyers' hands. Railroads that formerly would think of buying 100 locomotives at a time are now satisfied to inquire in lots of 25. If the takings of steel on railroad account were concentrated in fewer weeks, prices doubtless would favor larger sized inquiry, with all this usually means in the way of lower unit prices. It happens, however, that the railroads have not acted in any unison, and the equipment makers have little information as to the probable extent of forthcoming demand. The result apparently is that as low prices, other things being equal, are obtained on the basis of the small lot buying of the irregular and uncertain sort as when larger orders were placed. Car and locomotive builders repeatedly have expressed the wish that railroad buying policy were more definite, for under present conditions the pencils of the estimating departments have to be sharpened month after month.

Varieties of Valuation

DATA in respect to the Chicago, Milwaukee & St. Paul Railway that has just passed into receivership are excellently illustrative of variations in valuation by different methods. The company shows an investment in property to the amount of \$1,395,000,000. The Interstate Commerce Commission has placed a tentative valuation of \$662,000,000 on the road. On March 19, 1925, the quotations for the company's securities in the stock market indicated an aggregate market value of \$225,000,000, figuring the Government's credit and the equipment trust obligations at par. Here we have three forms of valuation, with a range of 1 to 6, and no one of them is representative of what a prospective purchaser would pay for the company as a going concern.

The highest valuation represents what the company has put into the property, much of which may have been lost, just as if the physical things represented by it had been dropped into the sea. The next figure represents a valuation of physical property as of a state more than ten years ago, computed by methods more or less arbitrarily and bureaucratically determined, which already have been challenged in the courts. The third and

lowest valuation represents transactions in the stock market involving a relatively small portion of the whole, with the certainty that if the whole had been forced for sale it would not have fetched so high a figure; nor on the other hand could anybody desiring to buy the whole obtain it for so little.

Two other valuations remain to be considered, viz: (1) reproduction value and (2) valuation of the basis of prospective earning capacity. In these two there is a considerable correlation, which in the instance of a public utility, however, is affected by legislative or official prohibitions with regard to permissible earnings. Recent court decisions are tending to remove such prohibitions, and we may be sure that in the reorganization of the Chicago, Milwaukee & St. Paul Railway and the substitution of a new financial structure, capitalization on the basis of prospective earning capacity will be the principle, for it is that which obtains in commercial economics, if not in academic and political views. Some reflections on this subject will illuminate the absurdity of Congress's setting up March 1, 1913, as a basis of valuation for taxation purposes; also it will illuminate a good many rate-making absurdities and a lot of other things.

The subject of valuation in rate-making cases, wherein earning capacity is limited by the State, is gradually being clarified by judicial decisions. Following a long string to the same general effect by State and Federal district courts the United States Supreme Court last week rendered one of major importance in the case of the Ohio Utilities Co. vs. the Public Utilities Commission of Ohio.

On the all-important subject of reproduction value, which the Supreme Court previously held is the dominant item in arriving at rates, it now has said:

Reproduction value, however, is not a matter of outlay, but of estimate, and should include a reasonable allowance for organization and other overhead charges that necessarily would be incurred in reproducing the utility. In estimating what reasonably would be required for such purposes, proof of actual expenditures originally made, while it would be helpful, is not indispensable.

The importance of this last decision is enhanced by its having been unanimous. It seems to us to mean that the procedure of the Interstate Commerce Commission in valuing the railroads is quite wrong, and that public utilities must be permitted to earn an adequate return on their present physical value, i.e., their reproduction cost by estimate. This is necessarily a different economic operation, in fact, the opposite from what obtains in respect to competitive industrial affairs whose prospective earnings are a function of demand and supply and whose valuation is a capitalization of prospective earnings, with physical valuation playing only a subordinate, or rather a delayed, part in the matter.

SOME conception of the vast expansion of our manufacturing industries is had from figures of national wealth published by the Census Bureau. Excluding the buildings and land, the 1922 figure for manufacturing machinery, tools and im-

plements is \$15,783,260,000, or 4.9 per cent of the entire national wealth. This represents a gain of 159 per cent over the 1912 figure of \$6,091,451,000, while the gain in total wealth over the 10-year period was less than half as much, being 72.2 per cent. Similarly, the gain from 1900 to 1912 in manufacturing machinery was 140 per cent, the earlier figure being \$2,541,047,000, while the increase in national wealth during those 12 years was only 110 per cent. The percentage of the total wealth represented by manufacturing machinery, in 1900, was 2.9, increasing to 3.3 in 1912 and to 4.9 in 1922.

Pride and Production Cost

WHILE no one is likely to assert that American steel manufacturers are in the business primarily for their health, few who know them well will deny that they are actuated in part by motives other than pure money-getting. There is a pride in the plant, a desire to excel, an ambition to have something fine to exhibit. Profits are wanted, but in many cases if the minds of those who collectively are the company were analyzed it would be found that when it is desired to make a million or two million or any other number of additional dollars it is not the number of mere dollars that is sought, but the cost of a new and improved blast furnace, or a new blooming mill or the rebuilding of some department which does not seem to be up to the standard of the remainder of the plant.

Pride would have it that every part of the plant must be up to standard. Then when the visitor is shown around there is nothing to be ashamed of. When that position has been attained, there is something fresh to aim at. The plant is all right, but it could be larger. If there are four blast furnaces and one is not up to the standard of the other three the owners don't like it. Thus it goes.

A plant has a certain capacity. It cannot produce more and frequently it has to produce less, for people will not buy all it can produce. The average production is necessarily below the capacity. Operation at capacity is the exceptional case. Why, if it can be avoided, should the lowest unit cost lie at the limit, the unusual, rather than at some intermediate point definitely selected as the expectancy or the most probable?

The average or normal profit is what counts. The case is stronger than that, for it is much more uncomfortable to pass through periods of operation below the average than periods above the average. If the unit cost rises through operations being above the predetermined rate, prices are obtainable readily covering the extra cost; but when unit cost rises through operation being light, there is no one to pay the bill. A plan might be adopted having as its aim that the unit cost should be lowest at a 65, 75 or 85 per cent operation, as analysis of business conditions and prospects should dictate, and improvements made from time to time be arranged in conformity with that plan. The principle is actually being applied to an extent; cases can be found of the lowest unit cost being at an operation well

under 100 per cent. But the practice is not so general as it would be were it not for pride of plant.

The Federal Arbitration Act

IN the new Federal arbitration law a long step has been taken in simplifying and expediting the settlement of trade disputes. The courts will be relieved of some of their burden, including cases involving technical questions, which might drag along for weeks.

The act makes valid and enforceable written agreements for the arbitration of disputes that arise out of contracts, maritime transactions or commerce among the States and Territories and with foreign nations. It exempts contracts of seamen, railroad employees or any other class of workers engaged in foreign or interstate commerce.

Under the terms of the act if a dispute arises in connection with a contract containing an arbitration clause and suit is brought in a Federal court, the court, upon application of one of the parties to the action, may stop the trial until arbitration has been provided. The practice is similar to that in State courts, in referring a case to a master in chancery. If suit has not been filed, any party to the contract may petition the court to enforce the arbitration clause. Contracts may provide that the judgment of the court shall be entered upon the award and the requirement may be carried out within one year after the award has been given, upon the application of the interested party. Fraud, corruption, evident partiality or misconduct of arbitrators in refusing to hear pertinent evidence, or prejudicing the rights of the parties, or exceeding the powers vested in an arbitrator, or failure to give a definite award, may be set up by either party as reason for vacating the entire award. In a general way the act follows similar statutes already operating in New York and New Jersey.

Trade disputes long have been a source of waste. They mean delay and the tying up of capital. Where courts are choked with business, as is often the fact (the trial calendars of the New York Supreme Court containing more than 27,000 untried cases), litigation may last for years. In the past the arbitration clause in contracts has not been commonly used, the chief reason, according to the advocates of the principle, being that it was useless because non-enforceable, amounting to little more than a gentlemen's agreement. The prophecy is now made that with the principle embodied in a Federal statute, many business houses will see its advantages in transactions involving interstate or foreign relations, and that it will come into frequent use in framing contracts.

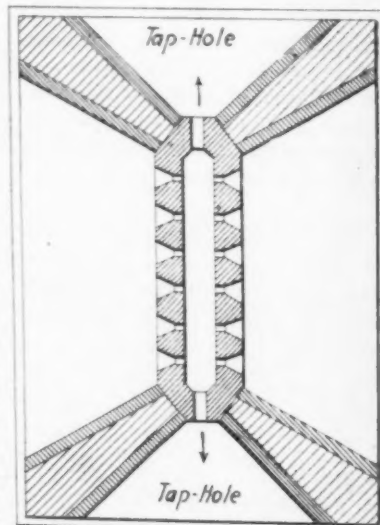
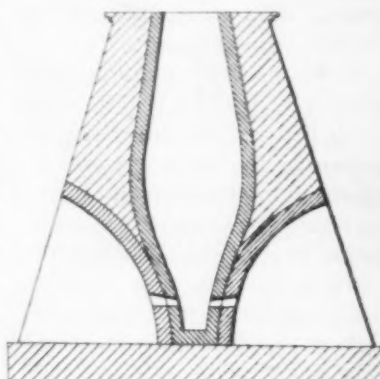
RECORDS compiled for industry broadly by the National Industrial Conference Board show that the business done by warehouses has been poor in the last five years, especially in the last four of the five, when compared with the volume of 1919. On the other hand, retail trade has been notably good for the same years in comparison

with that of 1919. Various explanations are offered. There is the good performance of the railroads, widely a matter of comment, making it possible to get dependable deliveries from maker to consumer. There is also the increased volume of mail order and of chain store business, particularly the latter. It scarcely can be said that the situation in respect to the jobbing trade is a permanent one, and there are few who are unmistakably aware of a definite reduction in the cost of distribution. If there has been some elimination of the middle man, as the records would indicate, it is evident that some other factor must become the focal point of the effort to reduce the spread between cost of production and price to the consumer.

CORRESPONDENCE

Shape of Blast Furnace Hearths

To the Editor: In regard to the article by S. P. Kenney and F. B. McKenzie in *THE IRON AGE*, Feb. 12,



entitled "Proposed Hearth and Bosh Construction," I would say that the idea is very old. On April 21, 1857, the Royal Prussian Hüttenmeister made a proposal to build an oblong blast furnace according to the accompanying illustration, remarking at the same time that "in recently built blast furnaces, in spite of the increase in the height and the areas, the production has not increased as expected because the blast could not penetrate to the center of the furnace."

On Sept. 4, 1858, a description was published in the *Mechanics Magazine*, London, of an oblong furnace designated as "Patent Alger." The Prussian Oberbergamt made a proposal to build a small experimental furnace on

this basis at Königshütte. As the cost became too high, the plan was abandoned and I am not aware whether a trial has been made in England.

H. ILLIES,

Chief Engineer, Luitpoldhütte.

Amberg, Bavaria, March 2.

The Pacific Coast Steel Co., operating steel plants in San Francisco and Seattle, has issued a financial report showing that the company has increased its assets from \$6,672,632 in 1923 to \$10,270,269 in 1924. The principal gain is shown in the property, plant and equipment account.

Report Received from Calcutta as to Prices of Indian Pig Iron

WASHINGTON, March 24.—It was stated yesterday at the Treasury Department that it had received from the American consulate at Calcutta, India, a report concerning "home market" prices in India of pig iron prevailing at the time of so-called dumping of Indian iron received at Galveston, Tex., which was the basis for the issuance of anti-dumping notices. The report of the American consulate now is before the anti-dumping unit of the Customs Division in New York, which is not ready to make known the contents. The procedure calls for the anti-dumping unit to send out inquiries to domestic pig iron producing interests to learn whether their industry has been injured by reason of alleged dumping of Indian iron in the United States. A report will be based on replies from these inquiries and recommendation made to the Secretary of the Treasury by the anti-dumping unit either for or against application of the anti-dumping act. The anti-dumping notices grew out of complaint made by Eastern merchant furnace interests. They were issued by the customs collector at the port of Galveston and at first two notices were issued on the strength of Indian iron imports received at that port. Since then two more have been issued from the same source in accordance with the required formality of law. It is expected to be a month or so before the anti-dumping unit makes its report to the Treasury Department in Washington.

It was announced at the offices of the Tariff Commission that it has taken no recent action regarding resumption of its inquiry in connection with an application to increase the pig iron duty by 50 per cent. Also it was stated it had not as yet been approached by the committee from the Concrete Reinforcing Steel Institute which at a recent meeting in Chicago expressed concern over imports of steel products.

Waste Material Dealers Hold Annual Meeting

The twelfth annual meeting and dinner of the National Association of Waste Material Dealers was held March 18, at the Hotel Astor, New York. In his report the president of the association, Harry De Groat, of A. M. Wood & Co., Philadelphia, called attention to the organization's credit bureau through which "thousands of reports are issued yearly and hundreds of controversies adjusted, to say nothing of account collected, all without recourse to law." The traffic department, he said, "has been working on a general reduction in rates on scrap iron and steel and other waste material from Southern States to Pittsburgh and eastern Pennsylvania consuming districts." Mr. De Groat said that it was expected that a "trade custom" for iron and steel scrap dealers would be adopted within the coming year, some progress already having been made with consumers of scrap, which should bring about better understanding.

Officers elected for the coming year were: President, Egmont L. Frankel, Frankel Bros., Toronto, Ont.; first vice-president, Henry Lissberger, Federated Metals Corporation, New York; second vice-president, G. H. Rady, E. J. Keller Co., New York; third vice-president, Edward B. Friedlander, Loewenthal Co., Chicago.

The dinner of the association was well attended by several hundred members and their guests. Speakers included Senator Simeon D. Fess of Ohio, Vincent Gilroy of the Arbitration Society of America, and Judge Harold B. Wells, humorist.

Pig Iron Production for 1924

A bulletin issued by the American Iron and Steel Institute gives the production of pig iron in the United States for 1924 as 31,504,790 tons compared with 40,361,146 tons in 1923, a decrease of 22.19 per cent. The decrease in basic was 19.18 per cent; Bessemer and low phosphorus, 30.02; foundry and ferrosilicon, 13.09 and malleable, 38.06 per cent.

Production of charcoal pig iron was 212,710 tons compared with 251,177 tons in 1923.

Bid on British American Nickel Corporation Rejected

The offering at auction of the properties of the British American Nickel Corporation, Ltd., on March 20 resulted in no sale. Only one bid, for \$5,000,000, was made and it did not reach the upset price fixed by the court. This upset price was not disclosed. The court authorized the National Trust Co., Ltd., the receiver, to conduct negotiations for a private sale of the properties and to submit offers to the court on or before May 7. Since the receivership an option has been obtained from the Wahnipitac Power Co. on the new development made by that company. This option is being sold with the assets of the Nickel Corporation. The evidence submitted to the court some weeks ago showed that approximately \$15,000,000 in cash and the equivalent in mortgaged securities of \$5,000,000, making in all \$20,000,000, had been expended on capital account in connection with the acquisition and development of the properties, apart from the \$20,000,000 of common stock, which was issued largely for the acquisition of the mining properties and the rights to the electrolytic process which is used in the refining of nickel and copper ores.

Far East to Be Represented at National Foreign Trade Council at Seattle

SEATTLE, March 20.—Nearly three months ago, the Seattle Commercial Commission, composed of prominent Seattle business men, and acting under direction of the Seattle Chamber of Commerce, sailed for the Orient in order to invite business men of the Far East to attend the meeting of the National Foreign Trade Council to be held in Seattle on June 24 to 26 next.

This commission has completed its trip and returned to Seattle last week. It reports having had a very successful trip, and that all indications are that prominent foreign countries will be well represented at the convention. William Pigott, president of the Pacific Coast Steel Co., Seattle, who is Seattle convention chairman, has received advices from a number of foreign countries that they will have duly accredited representatives at the convention. Abraham Martinez, director of the Colombian Bureau of Information, New York, has been named by his Government as Colombian representative. Harbin, China, will be represented by R. S. Homet, secretary and treasurer of the American Chamber of Commerce of that city; H. P. Moon, a prominent engineer of the East Indies, will represent Batavia, Java, and advices have been received from provincial and commercial bodies of British Columbia that that province will send large delegations of shipping men and Government officials.

The sessions of the convention will be held in the recently completed Olympic Hotel in Seattle, which is splendidly equipped to care for the delegates.

Service and other problems arising in its business were main topics of a staff meeting of the International Chemical Co., Philadelphia, held at the Hotel McAlpin, New York. Representatives from New England, New York and the home office attended as a sectional conference. What is known as the new International method of cleaning fuel oil tanks with the subsequent handling of the sludge removed was explained, also tests for cleaning die castings and aluminum without tarnishing the metal. The company has developed a new japan stripper to remove japan in a few minutes.

"Production of Sponge Iron," is the subject of a paper to be presented by Edward P. Barrett, metallurgist, U. S. Bureau of Mines, Pittsburgh, at the bi-monthly meeting of the Steel Works Section, Engineers Society of Western Pennsylvania at the William Penn Hotel, Pittsburgh, Tuesday evening, March 31.

Wrigley furnace of the Bon Air Coal & Iron Corporation, Lyles, Tenn., will go into blast about April 1.

Poor Year for Wheeling Steel Corporation but Prospects Encouraging

Last year was a poor one for the Wheeling Steel Corporation in point of earnings as it was with so many other steel companies. The annual report shows net profits for the year amounted to only \$865,110, and it was necessary for the company to draw upon its surplus for most of the dividend requirements on the two classes of preferred stock.

During the year the company produced 573,596 tons of pig iron, and 919,928 tons of ingots. The boats and barges of the company carried a total of 652,225 net tons of freight during the year, as against 891,872 tons in 1923, the reduction being solely in coal tonnage.

The value of the sales, or shipments, totaled \$64,810,529 against \$71,735,502 in 1923. Payroll disbursements for 1924 were \$27,767,207, about \$1,800,000 less than in 1923. The average number of employees was 15,549 as against 16,583 in 1923.

The report reviews the various additions and improvements to the plant, and shows that the program of improvement undertaken about three years ago is well on its way to completion, the larger parts of it being finished.

Beginning with the first of November and continuing up to date, the report says, the corporation's plants as a whole have been operated at more nearly their rated capacity and have produced a larger and better tonnage than ever before in its history in a like period, and now, for the first time the corporation finds itself in a position where its cost of production enables it to successfully compete for its full share of going business in all its several lines.

The present outlook is, in the main, reassuring. While new business is not coming forward in as large volume as could be desired, improvement can naturally be expected with settled weather. Stocks in the hands of the distributor are not large and any increase in demand on the part of the consumer will soon be reflected in increased bookings by the manufacturer.

The report follows:

Net earnings from operations after deducting charges for maintenance and repairs of plants, of approximately	\$4,700,000	\$4,852,830
ADD—Interest and income from investments, etc.		589,294
Total profits for the year....		\$5,442,124
DEDUCT—		
Provision for general depreciation..	\$2,878,979	
Provision for exhaustion of minerals and extinguishment of lease values	\$3,364	
Interest and discount on bonds and notes	1,554,671	
Provisions for Federal Taxes.....	60,000	\$4,577,014
Net profit for the year.....		\$865,110
SURPLUS		
Surplus at January 1, 1924.....		\$9,645,022
ADD—Net Profit for the year as above		865,110
		\$10,510,132
DEDUCT—Dividends:		
On Preferred A.....	\$508,178	
On Preferred B.....	4,229,944	4,738,122
Net Surplus carried to balance sheet		\$5,772,010

International Personnel Congress to Be Held in June

It is expected that more than twelve industrial countries will be represented at the International Personnel Congress which will be held at the Grand Hotel Britannia, Flushing, Holland, from June 20 to 27.

Sam A. Lewisohn, vice-president of the Miami Copper Co., will present a paper on "Works Councils in the United States." Other papers will include on "Training for Personnel Work in America," by Dr. Lee Galloway, vice-president, Ronald Press Co., New York, and another on "The Status of Personnel Work in America," by W. J. Donald, managing director of the American Management Association, New York. M. L. Flederus, Glass Works, Leerdam, Holland, is secretary of the congress.

Bethlehem's Final Report for 1924 with Production Figures

In its twentieth annual statement, the Bethlehem Steel Corporation showed net income for 1924 of \$8,916,181, against \$14,374,152 in 1923. Preliminary figures for the year appeared in THE IRON AGE of Jan. 29, page 339. Interesting details of the 1924 report include: Current assets, \$167,229,945; current liabilities, \$30,068,158; reduction in inventories of \$9,955,180; orders on hand, \$77,049,619, against \$53,264,911 a year before; 53,380 stock owners against 49,497 for 1923; cash expenditures for improvements, \$19,812,878; income by quarters, \$4,519,875 for the first, \$1,278,277 in the second, \$102,167 in the third and \$3,015,862 in the fourth.

For the first time tonnage of products was given. It follows:

	1924 Gross Tons	1923 Gross Tons
Ore	4,753,889	5,466,799
Limestone	1,361,345	1,190,978
Coal	5,586,200	6,593,668
Coke	3,446,728	4,261,976
Pig iron and ferromanganese.	3,475,011	4,033,015
Steel ingots	4,419,037	4,761,254
Finished products for sale....	3,266,245	3,541,713

Struthers Pig Iron Being Sold by the Receiver

Some of the iron piled in the yards at Struthers, of the Struthers Furnace Co., in receivership, has been sold the past month and a half, leaving about 68,000 tons still under control of the receiver. The bulk of this tonnage consists of foundry grades. H. W. Grant, receiver, states there is a possibility the company's stack at Struthers may be operated this summer, depending altogether upon conditions in the iron market and the prospects for disposition of the output in the merchant market.

In the meantime, the receiver has endeavored to reduce expenses to a minimum by abolishing the company's New York office and eliminating all help possible. An auditor is being maintained in the offices of the receiver, 1301-1304 Wick Building, Youngstown. Sale of iron on hand is under control of Hickman, Williams & Co., Pittsburgh.

The Sharon Steel Hoop Co., Sharon, Pa., whose blast furnace at Lowellville, Mahoning County, Ohio, is likely to be suspended this year for relining, has acquired some Struthers iron, having made the purchase through a middle interest.

Methods of Inspecting Welds to Be Discussed at Welding Society Meeting

Committee meetings will predominate on the opening day of the annual meeting of the American Welding Society, which will be held at the Engineering Societies Building, New York, April 22, 23 and 24. The resistance welding and the gas welding committees will meet in the morning, the electric arc welding committee in the afternoon and the educational committee in the evening.

An inspection trip will be made to the Bayway plant of the Standard Oil Co., on the afternoon of April 23, the annual dinner being scheduled for the evening of the same day.

At the technical session April 24 there will be a symposium on methods of inspecting welds and on testing the skill of operators. There will also be a meeting of the American Bureau of Welding, which is the research department of the American Welding Society.

Special design motor-driven pneumatic forging hammers will be installed by the Nazel Engineering & Machine Works, 4041 North Fifth Street, Philadelphia, in the plants of the National Tube Co., McKeesport, Pa.; American Tube Works, Somerville, Mass.; Rail Joint Co., Troy, N. Y.; American Spiral Spring & Mfg. Co., Pittsburgh. The Nazel company also reports a list of recent buyers of standard design hammers too long here to name, but indicative of a general flow of business of a magnitude not generally recognized.

Federal Trade Commission Policy Changed

Majority of Members Announce New Method of Procedure

—Public Interest to Be Considered Paramount—

Private Quarrels Will Be Disregarded

BY L. W. MOFFETT

WASHINGTON, March 24.—Business interests of the country will read with both interest and relief the announcement of the majority of the Federal Trade Commission stating sweeping changes in its policy concerning procedure in prosecution of complaints charging unfair practices. The departure is broad in character and will mean the wiping away of many petty cases now before the commission and the prevention of such matters being brought before it.

A change in the policy of the commission more favorable toward business interests of the country had been anticipated, almost from the time that President Coolidge entered the White House, when it was predicted that he would cause reorganization of the Federal Trade Commission, the Shipping Board and the Tariff Commission to be brought about. It became clearer that he had a change in mind with regard to the policy of the Federal Trade Commission, when he appointed to it former Representative William E. Humphrey, of the State of Washington, a conservative Republican. Indicating further that this change was in mind, considerable significance was placed upon the fact that Mr. Humphrey was made head of the legal division of the Federal Trade Commission and he at once set to work studying procedure of the commission and its jurisdiction. This was followed by the announcement of the change in policy voted upon by Mr. Humphrey together with the two other Republicans of the commission, Chairman Vernon W. Van Fleet and J. W. Hunt. In this connection, it is interesting to recall that Mr. Hunt, appointed by President Harding, had been rated in many quarters as a so-called progressive Republican, because of his former affiliation with the Iowa Farm Bureau Federation.

Two Members Dissent

Dissent from the change in procedure of the commission was made by the two other members, Huston F. Thompson and James F. Nugent. The changes are similar to those proposed in the so-called Wadsworth-Williams bill introduced at the last session of Congress, and also in some respects are consistent with those that had been recommended by former Commissioner Nelson B. Gaskill, whom Mr. Humphrey succeeded. Mr. Gaskill, in order to get recognition of his recommendations, had to submit them as a minority report which was sent to Congress after majority members of the commission had declined to permit Mr. Gaskill to have his recommendations printed as part of the regular annual report. Changes in the policy adopted by the commission are of such character that they did not require legislative action, which apparently would be necessary if all of the changes proposed in the Wadsworth-Williams bill were adopted.

Under the new procedure the Federal Trade Commission will not in the future consider proceedings of alleged unfair practices where so-called violation of law is entirely a private controversy redressable in the courts except where the practices substantially tend to suppress competition as affecting the public. It was declared in the majority report that in all such cases there must be three parties involved, including the respondent, the competitor claiming to be injured, and the public. The commission also adopted a rule concerning the handling and settlement of cases that all cases shall be settled by stipulation except when the public interest demands otherwise.

It was voted to lay down a rule that in all cases

the proposed respondent shall receive a hearing before the Board of Review to show cause why a complaint should not be issued. The chief counsel is directed to report to the commission with a memorandum stating his reasons and views concerning cases now pending for the disposal of the commission, cases which may or may not affect the three parties mentioned, the respondent, the competitor injured, and the public.

The chief examiner also is required to report to the commission all pending applications for a complaint where the examination in his opinion shows that the application comes within the requirements of the new rule. In the new practice regarding the handling and settlement of cases, the majority pointed out that the object of all proceedings of the commission is to end all unfair methods of competition or other violations of the law of which it is given jurisdiction.

The law provides for the issuance of the complaint and a trial as procedure for accomplishment of this end, it was declared. But it is also provided, the majority said, that this procedure shall be had only when it shall be deemed to be in the public interest. This, it is pointed out, plainly gives the commission a judicial discretion to be exercised in the particular case. The report explains the difference between complaints which may have or may not have merit and adds that when the very business itself of the proposed respondent is fraudulent, it may well be considered by the commission that the protection of the public demands that the regular procedure by complaint and order shall prevail.

Decided Change of Policy

In adopting a rule providing for hearings by proposed respondents before a complaint is issued, which means a wide departure from the practice of the past and which, it is expected, will greatly lessen the number of complaints issued, the new rule provides that:

"In all cases before the Board of Review, before it shall recommend to the commission that a complaint issue, it shall give to the proposed respondent a hearing before said board to show cause why a complaint should not issue. Said hearing shall be informal in its nature and not involve the taking of testimony. The proposed respondent shall be allowed to make or submit such statement of facts or law as it desires. The extent and control of such hearing shall rest with a majority of said board. Three weeks' notice of the time and place of such hearing shall be served on the respondent by the secretary of the commission."

How Respondents May Be Damaged

Commenting upon this latter ruling, the majority report of the commission says:

"While under the old rule a notice and hearing is given after complaint is issued, a majority of the commission is of the opinion that the mere issuance of a complaint often is of damage to a respondent if it shall be found that the respondent is not guilty of the practices charged. It is impossible to obviate this in all cases, but the majority feels that great care should be exercised to avoid such effects. Therefore the majority believes it is in the interest of justice that before a complaint is issued against a party he should be afforded an opportunity to show any reason he may have either in fact or in law why a complaint should not be issued. The majority also believes that such hearings will be to the advantage of the commission by develop-

ing facts for the information of the commission from which it may be better able to determine whether cause exists for the issuance of a complaint."

Will Consider Jurisdiction

It is reported also that the commission in the future also is going to give closer study to the question of jurisdiction than it has done in the past. Contention has been made that one reason the commission has lost so many cases in the courts has been on the ground of lack of jurisdiction. It has been reported that one thing in the mind of majority members of the commission is to make careful distinction between cases involving intrastate and interstate matters. In the former instance, the commission would be without jurisdiction. In this connection, it has been claimed by some

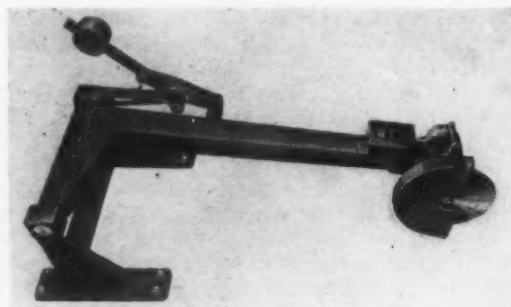
authorities that the commission has issued complaints in a number of cases which involved only intrastate issues. An example of this, according to these sources, is the well known Claire Furnace Co. case. Attorneys for the iron and steel companies in the case have repeatedly pointed out that the commission has no jurisdiction and therefore has no right to demand the iron and steel manufacturers to submit costs and other data, because it is maintained that manufacturing is intrastate and is not interstate.

According to reports the new policy of the commission over and above those formally announced would mean that such cases as that of the Claire Furnace Co. would not be taken up by the commission. This case itself, however, is before the United States Supreme Court.

New Swing Saw

Ease and safety of operation, making for high production, are among the features claimed for the swing saw illustrated, which is a recent addition to the line of the Oliver Machinery Co., Grand Rapids, Mich.

The machine is arranged with the motor-on-arbor type of drive. The hanger is cast in one piece and is designed so that it may be mounted either on the wall or ceiling. The main frame is of single-arm type cored



in U-form and swings on large ground pins. The counterbalance is designed to facilitate moving of the arm. The slot in the weight arm is shaped to act as a safety feature by bringing the saw to its starting position when the handle is released. The fulcrum pin is hardened and ground and provided with flats so as to present new wearing surfaces, should wear necessitate such adjustment. The weight is provided with safety chain, as shown.

The motor arbor housing is bolted to the frame in a tongue and groove, allowing 2-in. vertical adjustment for set up, or 4-in. reduction in size of saw. The housing is of three-piece construction, the end pieces being of cast aluminum. The stator of the motor is mounted in the housing and the shaftless rotor is keyed to the saw arbor. The motor, which has a full load speed of 3450 r.p.m. may be furnished up to 5-hp. for 2 or 3 phase, 60 cycles, 220 or 440 volts. The saw arbor is of crucible steel, machine ground, and is mounted in two radial ball bearings, which are pressed on. The bearings are inclosed and run in grease. The arbor carries two 4-in. diameter saw collars and nut and a 16-in. saw. Alemite system of lubrication is employed throughout.

A one-piece cast saw guard is regular equipment and a hinged steel plate on one side facilitates changing of saws. A front or swinging nose guard of aluminum, which rides on the work and provides protection when pulling the saw forward, is available as an extra.

Equipped with a 16-in. saw, the machine will cut planks 12 in. wide and 3½ in. thick, and with an 18-in. saw, planks 12 in. and 4½ in. may be cut. The length of the machine, which is designated as the No. 136, is approximately 7½ ft. from center of saw to base of ceiling hanger, or approximately 6 ft. 7 in. from center of saw to the top of the wall bracket. The weight crated is 800 lb.

Wage Scale of 1917 Reestablished in Connellsville Coke Region

UNIONTOWN, PA., March 22.—Independents in the Connellsville coke region have reestablished an independent scale for the coal and coke plants in the district. It is the same scale as was in effect in 1917 and the one which was in effect for a short time last December. The new scale has been put into effect without serious opposition, although three plants of W. J. Rainey, Inc., were slightly affected by refusal of a number of men, not more than 400 all told, to return to work two days after the scale was posted. A temporary shortage was reported at a few other mines in the region. However, no serious delays have been caused and no untoward results are expected from the action of the independents in establishing the low scale, a situation admittedly necessary if they are to operate under present market conditions. It is reported that there have been some communistic activities in the region. Union leaders have been here, but it is understood that they have told workers in the region that the Mine Workers Union will give no support to a strike in the Connellsville region. Union activities, it is reported, are to be confined and centered in the West Virginia field.

The situation in the region has shown a steadily declining production due to lack of demand and low price offered. With operations on the reduced scale, however, it is believed that more business and a better run is in sight for the second quarter beginning April 1.

New Repair Forge

A new repair forge having a one-piece steel hearth nearly 6 in. deep and 24 in. square has been developed by the Buffalo Forge Co., Buffalo, N. Y. It is designated as the No. 236. It has been designed with the special effort to get a construction calculated to withstand the necessarily rough usage of a portable device, and adding to the strength of the one-piece construction is a wide flange around the edge at the top.

Last year 4627 gross tons of tin were exported from Hongkong to the United States and 180 tons to Europe. In 1923 the total exports were 5624 tons, the United States receiving 5149 tons, according to Consul A. Y. Carlston, Hongkong. The 1924 exportation to the United States had a declared value of \$3,819,698, United States currency.

Heavier requirements are developing for highway reinforcing mesh as road building programs are getting under way in various sections of the country. The Truscon Steel Co., at Youngstown, reports substantial improvement in the requirements for concrete reinforcing material for road building.

European Iron and Steel Makers Pessimistic

England Reports Better Pig Iron Business but Belgium Is
in Sorry Straits—Less Activity in
Germany

(By Cablegram)

LONDON, ENGLAND, March 23.

PIG iron demand is broadening and business is on a better scale. Domestic consumers have placed orders for foundry grades, while export orders for both prompt and forward delivery have been placed. No large individual tonnages are involved, but the outlook generally is improving. Local demand for hematite is improving, but domestic consumers still are quiet.

Foreign ore is dull, with very little new business moving. Fair quantities are arriving under old contracts. Bilbao Rubio is held at about 22s. (\$5.26), c.i.f. Tees.

Finished steel makers have reduced export prices, but are finding little new business, though inquiry is broadening. Rivet, bolt, nut and other light weight material makers are busy, but heavy gage material is difficult to dispose of, owing to the continued slackness in new shipbuilding.

Sheets and Tin Plate

Tin plate is in improved demand for the domestic trade, with a fair number of orders placed—some into third quarter deliveries. Export buying is moderate. Not many makers are now sellers at the schedule prices. Sales have been made up to 22s. 6d. (\$5.55) basis IC, f.o.b.

Galvanized sheet makers are introducing the practice of curtailing output, owing to lack of orders. In consequence, the market is firmer.

Black sheets are dull and weak.

On the Continent of Europe

Continental prices have stiffened, though there is no improvement in the volume of orders passing

through traders here. Consumers of semi-finished steel are inquiring, but are not inclined to pay the prices asked.

The German Raw Steel Syndicate has been prolonged until the end of next year. The output for April is to be maintained at 85 per cent, as in March.

The Tubes Syndicate has been definitely constituted for a period of seven years.

British Iron and Steel Interests Despair of Early Improvement

LONDON, ENGLAND, March 5.—Conditions in the iron and steel markets of this country continue to go from bad to worse and, whereas at one time there seemed to be a better tone and more chances of improved trade, now the markets have fallen back into an apathetic state again. The uncertainties as to the trend of prices is undoubtedly causing domestic consumers to refrain from entering into commitments beyond covering bare requirements. The export business moving, in both pig iron and in manufactured iron and steel, for many weeks past has been on a very poor scale, with the result that steel plants in this country are working only part time, while one is continually hearing of blast furnaces being damped down.

The position in Scotland is worse than in England and Wales; one firm alone recently put seven furnaces out of commission. This is due to the slump in shipbuilding. On the Clyde the volume of new tonnage on the slips is worse than it was at the same time last year. This state of inactivity is reflected naturally in the poor call for shipbuilding material generally, with the result that plate mills all over the country are short of rolling orders. The general engineering trades are fairly well occupied on home orders, while railroad material builders have a considerable amount of work on hand in connection with the big reconstruction con-

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.78 per £1, as follows:

Durham coke, del'd..	£1 3s.	\$5.50
Bilbao Rubio ore†...	1 2½	5.38
Cleveland No. 1 fdy...	4 2½	19.72
Cleveland No. 3 fdy...	3 17½	18.52
Cleveland No. 4 fdy...	3 16½	18.28
Cleveland No. 4 forge	3 15½	18.04
Cleveland basic	4 0	19.12
East Coast mixed....	4 4½	20.20
East Coast hematite...	4 19	23.66 to \$23.90
Ferromanganese	15 0	71.70 to 74.09
*Ferromanganese	15 0	71.70 to 74.09
Rails, 60 lb. and up...	8 10	40.62 to 43.02
Billets	7 0	33.46 to 38.24
Sheet and tin plate		
bars, Welsh	7 17½	37.64
Tin plates, base box...	1 2½	5.29 to 5.44
Ship plates	8 15	1.87 to 1.97
Boiler plates	13 0	2.77 to 2.88
Tees	8 15	1.87 to 1.97
Channels	8 0	1.71 to 1.81
Beams	7 15	1.65 to 1.76
Round bars, ½ to 3 in.	9 0	1.92 to 2.03
Galv. sheets, 24 gage	16 0	3.41 to 3.52
Black sheets, 24 gage	11 10	2.45
Black sheets, Japanese		
specifications	15 5	3.25
Steel hoops	10 15	2.29 and 2.67*
Cold rolled steel strip,		
20 gage	16 0	3.41

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron:(a)		
Belgium	£3 15s.	\$17.83
France	3 15	17.83
Luxemburg	3 15	17.83
Basic pig iron:(a)		
Belgium	3 14	17.69
France	3 14	17.69
Luxemburg	3 14	17.69
Billets:		
Belgium	5 5	25.10
France	5 5	25.10
Merchant bars:		
Belgium	5 16	1.24
Luxemburg	5 16	1.24
France	5 16	1.24
Joists (beams):		
Belgium	5 10	1.17
Luxemburg	5 10	1.17
France	5 10	1.17
Angles:		
Belgium	5 18½	1.28 to 1.28
½-in. plates:		
Belgium	7 0	1.49
Germany	7 0	1.49
¾-in. ship plates:		
Luxemburg	7 0	1.49
Belgium	7 0	1.49

(a) Nominal.

tracts received from some of the railroad companies a few months back.

Tin Plate Schedule Reduced

The tin plate trade has been disturbed by the action of the makers in reducing the schedule price by 1s. 4½d. basis within the space of a fortnight, but this step was taken to combat competition in other parts of Europe and, it is hoped, will encourage consumers. So far the demand has shown some signs of improvement, but the large works still have very heavy stocks to clear off. The action of another works in associating itself with one of the big oil plate consumers, in erecting separate mills for the supply of plates to the latter concern alone, has caused the big group of tin

mills a certain amount of apprehension. Business in both black and galvanized sheets has fallen right off and prices have come down considerably, but a revival of demand from India for galvanized sheets would soon put the market on its feet again.

On the Continent the position in the iron and steel trades is difficult to fathom from the point of view of traders in this country. Only a small volume of tonnage is passing with traders here, but the works nevertheless are, generally speaking, fairly full up and deliveries are still bad. It must be, therefore, that business is being done by the markets or their agents direct. Prices on the other side are weakening and this tends to make buyers hold off still more.

GERMAN INDUSTRY UNSETTLED

Optimism Prevails, but Political and Other Upsetting Influences Depress Trade

BERLIN, GERMANY, March 7.—Conditions in the iron business are still unsettled; customers are holding back and cautiously observing the tendency of the market. A certain depression is noticeable all around, which largely influenced business at the Leipzig fair, held this week. The turnover at Leipzig, where the technical industry made large endeavors, was small. The political aspect, whose uncertainty became more pronounced through the death of President Ebert, is having a depressing influence on business activities. The delay in the conclusion of the Franco-German trade agreement also tends to prolong the unsettled state of business. The Rhenish-Westphalian ironmasters are anxious about the possibility of strong French competition in case the tariff is too low, while the South German engineering industry, which is using a large amount of French iron, is endeavoring to keep the tariff as low as possible, to be able to secure cheap raw material in future. Export in rolled material is quiet.

The ironmasters are, however, optimistic, as the mills generally have orders for some weeks, especially in thin sheets and bar iron. They therefore decline to make concessions and the limiting of production to 85 per cent of the quotas in the Raw Steel Syndicate is having a steadying influence on prices. Current quotations in marks per metric ton, with American equivalent, per gross ton or per lb., are as follows:

	Marks	
Blooms	112.50 or \$27.22	
Billets	120 or 29.04	
Sheet bars	125 or 30.25	
Wire rods	145 or 35.09	
Bar iron	135 or 1.46c.	
Structural shapes	132.50 or 1.43c.	
Universal iron	147.50 or 1.59c.	
Hoop iron	165 or 1.78c.	
Sheets, heavy (No. 6 and lower)	150 or 1.62c.	
Sheets, medium (No. 6 to No. 11)	180 or 1.95c.	
Plates, 1 to 3 mm. (No. 11 to No. 20)	210 or 2.27c.	
Plates below 1 mm. (No. 20 and higher, U. S. gage)	225 or 2.43c.	
Wire, drawn, bright	185 or 2.00c.	
Wire, drawn, galvanized	230 or 2.49c.	

There has been a hitch in the German Tube Syndicate, for which the agreement was signed at the beginning of this month, as the Rheinische Stahlwerke has made the proviso that before the Tube Syndicate starts operations, the Raw Steel Syndicate is to be definitely established for a term of five years. This will be decided upon at the next meeting of the Raw Steel Syndicate, on March 12, and it is therefore not certain whether the Tube Syndicate, which would include the Czechian tube producers, will function.

Employment in the engineering tool industry is improving and the market, which was very erratic up to the beginning of February, has a more steady aspect. Competition is keen but the practice of dumping is gradually abandoned. On the other hand there is larger demand, especially in standard high-speed tools, and many large consumers, such as the iron industry and the railroads, which have been holding back with orders for some time, are replenishing their stocks.

The uncertainty that prevailed in the tool industry for the last few years has been a strong inducement to re-establish the convention among the manufacturers of tools. About 50 firms have already joined it and the favorable development of the market may be attributed partly to this fact. Export business is still weak, but there is a noticeable improvement in the trade with South America, Italy and Spain. The Refined Steel Syndicate has increased prices for tool steel by 10 per cent and manufacturers of tools are therefore also considering a corresponding increase in prices.

German Blast Furnaces Busy

The comparative quietness in the German iron market lately does not have the character of a slump. On the contrary, the blast furnace works were well employed during February and have sufficient orders on hand for March. The works have increased the production of pig iron, especially Luxemburg quality, and there is consequently a strong demand for ore, and large orders have been placed abroad. Some Rhenish-Westphalian works have contracts up to 1930 with Swedish ore suppliers, for several million tons. Large contracts for North African ore have been made, also. The pig iron trade was comparatively brisk during February, as the foundries are well employed. The engineering works also show large demand. German Upper Silesian pig iron production is increased and several more blast furnaces are to be rekindled shortly.

At the last meeting of the Raw Steel Syndicate an agreement with the finishing industry, with a view to stimulate exports, was made for three months, coming into force March 1. In accordance with the agreement the syndicate fixed the following export prices, to apply until the end of March, and in future to be determined by a joint committee:

	Marks	
Ingots	100 or \$24.20	
Blooms	107.50 or 26.01	
Billets	115 or 27.83	
Sheet bars	120 or 29.04	
Wire rods	136 or 32.91	
	Per Lb.	
Bar iron	118 or 1.27c.	
Structural shapes	115 or 1.24c.	
Thin plates	195 to 205 or 2.11c. to 2.22c.	

An award on working hours in the Rhenish-Westphalian iron industry extends the agreement now in force, except that the 8-hr. shift is reintroduced in the blast furnaces, rolling mills, etc., while in the finishing industry the 56-hr. week remains. The question whether the Saturday shift can be finished on Saturday at midnight is to be threshed out in negotiations between employers and men, which are to start early in May.

The Stinnes concern, which after the war started to build up its own shipping organization, has made an agreement with the Hamburg American Line and the North German Lloyd in regard to certain routes to Eastern Asia and South America. Thus the struggle in which the German shipping concerns have been engaged for the last few years, which was conducted to prevent the Stinnes concerns from gaining an influence in German shipping, has come to a standstill. This is significant, as it contains the acceptance of the Stinnes company among the large German shipping companies, which have been in strong opposition to it since it started in this line of business. The Stinnes shipping company has considerably enlarged its fleet since 1920.

LUXEMBURG SEEKS IRON MARKETS

Shipping Pig Iron to United States and Japan— Converting Basic Slag Into Fertilizer

LUXEMBURG, Feb. 26.—The enforcement, as from Jan. 10, of high import duties by Germany, while not completely suppressing German demand for iron and steel products from Luxemburg, has nevertheless profoundly disturbed the selling conditions of the metallurgical industry. The reduction of absorptive capacity of the German market was accompanied by an increase of Luxemburg iron and steel output which, anyhow, enabled the ironmasters of the Grand Duchy to maintain their costs within limits, in keeping with the comparatively low level of selling prices.

The condition of the world markets in January was pretty satisfactory by comparison with December and, as most of the ironworks of Luxemburg had order books sufficiently filled, the shading of prices was not important and differences between December and January quotations were generally insignificant.

Pig Iron Sales to United States

As a compensation for the falling off of their sales to Germany, Luxemburg ironmasters attach much importance to finding an outlet in the North American markets, opened to them by the depreciation of the franc, and where they already have succeeded in putting through a few large deals. The Japanese market also widened in January, and the transforming industries of that country are now giving out rather interesting orders in semi-finished products. Worth

mentioning, also, is the fact that the Turkish market, which for a long time offered practically no opening, has now become somewhat active.

Taking into account the difficult situation the iron mining industry of Luxemburg is laboring under, its present prospects are somewhat improved by demands for ore made by Lorraine, the Sarre Territory and Belgium. On the other hand, railroad rates that are almost prohibitive stand in the way of ore exports to Germany.

There is some talk of creating a "cartel" of French, Belgian and Luxemburg producers of basic slags for seeking, in the high price at which such fertilizers are sold to German agriculture, a compensation for the difficulties created by the policy of the Westphalian ironmasters.

Prices a Little Lower

In February the market of Luxemburg iron and steel products somewhat weakened in sympathy with, but to a lesser extent than, the Belgian market. The industry of the Grand Duchy reaped at this juncture the advantage due to substantial orders booked in January.

Chill cast foundry pig iron No. 3 P.L. is keeping rather firm at 350 (Belgian) fr. (\$17.81 per gross ton), f.o.b. Antwerp.

In semi-finished products available tonnages are unimportant, except perhaps for targets. Prices f.o.b. Antwerp are stronger at £5 2s. 6d. (\$24.73) for blooms, £5 5s. (\$25.34) for billets, £5 8s. to £5 9s. (\$26.06 to \$26.30) for targets.

Steel products are weaker: at £5 9s. to £5 10s. (1.16c. to 1.17c. per lb.) for beams and £5 15s. (1.22c.) for bars.

BELGIAN MARKET DISORGANIZED

Lower Prices and Pessimistic Outlook—Competition Severe for Export Business

BRUSSELS, BELGIUM, March 6.—Complete disorganization reigns on the market; prices, when obtainable, are nominal. This unfavorable situation results from causes already discussed, and also in consequence of the attitude of the bigger export firms, British and German, particularly, who openly speculate on fall in prices and offer products at a rate distinctly below that of Belgian works. This speculation renders the market unreliable and makes for scarcity of orders, a state of affairs most detrimental. Luxemburg quotations are identical with Belgian, but the drop in French currency renders Lorraine competition more active.

Coke.—Demand feeble and prices maintained with difficulty, in spite of the Syndicate's action; until now the price is held at 140 fr. (\$7.17) on March 1, as against 145 fr. (\$7.42) on Feb. 1; a new drop is to be expected for April 1.

Pig Iron.—This market resists somewhat, yet, impressed by the general pessimistic outlook, it is weaker. Demand is quiet in foundry iron for export; inland quotations are 340 to 350 fr. (\$17.40 to \$17.90); for export, 350 fr. (\$17.90), f.o.b. Antwerp. Luxemburg and Lorraine quotations are similar. The output of basic iron is heavy, but almost completely absorbed by the producers. In consequence available tonnage is rare and in demand even by Lorraine plants, a noteworthy fact, but at very low prices: 330 fr. (\$16.90) or thereabout.

Semi-Finished Products.—Firm enough, although quotations are slightly lower than last week, with unimportant available tonnage. Inland quotations are: blooms, 470 to 475 fr. (\$24.05 to \$24.30); billets, 500 to 505 fr. (\$25.60 to \$25.85); targets, 500 to 515 fr. (\$25.60 to \$26.35). F.o.b. Antwerp: blooms, £5 1s. 6d. to £5 2s. 6d. (\$24.25 to \$24.50); billets, £5 4s. to £5 5s. (\$24.85 to \$25.10); targets, £5 7s. 6d. to £5 8s. 6d. (\$25.70 to \$25.95).

Iron.—No business, and several producers have closed down partially because of the exorbitant price of scrap. Inland iron, No. 3, is quoted at 590 to 600 fr.

(\$30.20 to \$30.70); for export, £6 2s. 6d. to £6 5s. (\$29.25 to \$29.85), f.o.b. Antwerp.

Finished Steel.—Weak and depressed market; a mend is not expected before the result of the coming elections is known. Prices drop; however, the lowest level appears to have been attained. There is no animation in regard to beams. Inland: 525 to 535 fr. (1.20c. to 1.22c. per lb.); for export, £5 7s. 6d. to £5 10s. (1.15c. to 1.17c.); bars for inland: 540 to 550 fr. (1.23c. to 1.26c.); for export, £5 12s. 6d. to £5 14s. (1.20c. to 1.22c.). Rods are weaker at £6 16s. 6d. (1.45c.), f.o.b. Antwerp; wire rods are in much demand at £7 (\$33.45). Quotations from Luxemburg and Lorraine are much the same.

Sheets.—This market resists better than that of heavy steels; prices are dropping, but in a more moderate manner. Heavy sheets are most affected; for inland, 650 to 670 fr. (1.49c. to 1.53c.); for export, £6 19s. to £7 (1.48c. to 1.49c.). The medium sheets (3 and 2 mm., or No. 11½ and No. 14-gage) are at 720 to 820 fr. (1.65c. to 1.87c.), inland; f.o.b. Antwerp, at £7 10s. (1.60c.); light sheets appear firmer at 900 to 1125 fr. (2.06c. to 2.57c.).

Scrap.—Feeble; prices nominal in consequence of lack of business; scrap iron (to be broken up), is quoted at 280 to 290 fr. (\$14.35 to \$14.85); open-hearth scrap at 270 to 280 fr. (\$13.80 to \$14.35); blast-furnace variety at 250 to 260 fr. (\$12.80 to \$13.30); scrap shavings are at 200 to 210 fr. (\$10.25 to \$10.75); mechanical cast iron, first choice, at 360 to 370 fr. (\$18.45 to \$18.95).

The Milwaukee Steel Foundry Co., Milwaukee, has established a fellowship in metallurgy of \$1,500 at the University of Wisconsin, Madison. The first appointee under the fellowship is Leo Shapiro of Madison, who is making a study of the technical problems peculiar to the steel casting industry. He is carrying on the research projects at the university in collaboration with A. T. Baumer, works manager of the Milwaukee foundry, who is enrolled as a graduate student in the university class of graduate engineers conducted in Milwaukee by the Extension Division of the State University.

Iron and Steel Markets

SLIGHT CURTAILMENT

March Steel and Pig Iron Show Lower Rate

Some Adjustment of Prices and Output— Competition in Chicago District

The past week has brought some curtailment in output of steel and pig iron. It is slight as yet, but enough to indicate that the daily rate of steel ingot as well as pig iron production for March will fall below the average for January and February.

The Steel Corporation's operations still hang about 94 per cent, but the several independent companies are at reduced percentages. In the Pittsburgh and Youngstown districts the independents are now on an 80 per cent basis, making the average for the industry in those districts about 82 per cent, as against 85 per cent a week ago.

In the Chicago district the blowing out of a blast furnace at Joliet and the banking of one at Gary mark the first change in that busiest of all producing centers. At Youngstown one Republic blast furnace has been banked. Two or three merchant furnaces in western Pennsylvania are likely to go out by April 1.

Plate and sheet mill operations show some irregularity, the demand for sheets having been less than expected, while the situation in plates continues to be closely competitive.

Some Chicago mills find specifications beginning to lag, indicating that with the exceptionally smooth operation of the railroads in the past winter consumers have been well supplied. In Chicago itself Pittsburgh and Ohio mills are meeting the prices of local producers in plates, shapes and bars.

Rail and track supply rollings are large and such mills will be well occupied for months, but railroad equipment orders since Jan. 1 have fallen below those of early 1924. Against 50,000 cars ordered in the first quarter of 1924, the total for the past three months is 21,000. Last year showed 18,000 car bodies placed up to March 31; thus far this year the total is 2000. Locomotives ordered this year number 240; in the first quarter of last year 420.

The Chesapeake & Ohio has ordered 30,000 tons of rails, of which 24,000 tons was placed at Chicago. The Pennsylvania has inquired for 10,000 tons of tie plates, and the New York Central will open bids next week for 3000 tons of bars, plates and shapes, 300 tons each of sheets and forging billets and 4000 axles.

Including 10,000 tons for the Brooklyn Edison Co., and 18,000 tons for the Stevens Hotel in Chicago, bookings of fabricated structural steel in the past week called for 53,000 tons, or more than in any other week this year. Compared with the first quarter of 1924, there is a marked falling off this year in the number of small steel buildings, while the tonnage of large projects considerably exceeds that of a year ago.

While generally the price situation is little changed, plates and shapes are scarcely firm, while sheets show \$2 to \$4 a ton recession from February asking prices. Wire products can generally be had at the prices ruling before the last formal advance.

The present state of the sheet market has emphasized the variant views of buyers and sellers of sheet bars. A Cleveland mill has just sold 10,000 tons of sheet bars at the market price of time of delivery, and a sheet mill offer of \$37.50, Cleveland, is reported for 50,000 tons, though other sheet producers talk \$37 for sheet bars and \$35 for slabs.

Western mills find encouragement in the prospects for road building and in the expected increase in automobile and implement manufacture. It is estimated that more than 200,000 tons of reinforcing steel will be required for highway construction alone this year.

Most implement works are doing well, particularly those making tractors. The automobile industry has had the expected seasonal pick-up but is still buying cautiously.

Selling of pig iron by Tennessee furnaces on a basis of \$18.50, Birmingham, has had a depressing effect on the Southern market, but Alabama furnaces still hold to recent quotations, although making few sales. The pig iron market in general is weak. In the Pittsburgh district steel making grades have declined 50c. a ton, but this is attributed to the recent reduction of wages of coke workers. Chicago district furnaces are meeting very active competition from distant points.

Blast furnace coke has eased off to \$3.25 at ovens for either spot or second quarter delivery. Steel companies with by-product coke plants have made less pig iron in the past two weeks and thus have had by-product coke to sell in competition with beehive.

THE IRON AGE pig iron composite price has fallen to \$21.88, from \$22.13 last week. One year ago it was \$22.73. Finished steel remains at 2.531c. per lb., just \$4 per net ton less than one year ago.

Pittsburgh

Slight Decrease in Production—Increased Consumption Is Expected

PITTSBURGH, March 24.—The steel situation now is in process of adjusting itself in both a price and production way to the developments of the past few weeks, which among other things have demonstrated the country could not sustain the January-February rate of production, and that consumers would not go along with the advanced prices announced around the end of January and the beginning of February. While the recent recession in prices of those products which had two nominal advances since December appears to have stimulated purchases to some extent, the gain has been in number, rather than in size of orders, and all makers have had difficulty in building up backlogs. With the exception of automobile sheets, this has been particularly true in the sheet industry and a further recession

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Mar. 24, 1925	Mar. 17, 1925	Feb. 24, 1925	Mar. 25, 1924
No. 2X, Philadelphia...	\$24.26	\$24.26	\$25.01	\$24.13
No. 2, Valley Furnace...	21.00	21.00	22.00	23.00
No. 2, Southern, Cin'ti...	24.05	24.05	24.05	26.55
No. 2, Birmingham, Ala...	20.00	20.00	20.00	22.50
No. 2 foundry, Chicago...	24.00	24.00	24.00	24.50
Basic, del'd, eastern Pa...	23.75	23.75	23.75	21.50
Basic, Valley furnace...	21.00	21.50	22.00	21.75
Valley Bessemer del. P'gh.	\$3.76	24.26	24.26	24.76
Malleable, Chicago...	24.00	24.00	24.00	24.50
Malleable, Valley...	21.50	21.50	22.00	22.50
Gray forge, Pittsburgh...	22.26	22.26	23.26	23.76
L. S. charcoal, Chicago...	29.04	29.04	29.04	29.15
Ferromanganese, furnace...	115.00	115.00	115.00	107.50

Rails, Billets, Etc., Per Gross Ton:

	Mar. 24, 1925	Mar. 17, 1925	Feb. 24, 1925	Mar. 25, 1924
O.-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh...	37.00	37.00	37.00	40.00
O.-h. billets, Pittsburgh...	37.00	37.00	38.00	40.00
O.-h. sheet bars, P'gh...	38.00	38.00	38.00	42.50
Forging billets, base, P'gh.	42.50	42.50	42.50	45.00
O.-h. billets, Phila...	41.67	41.67	41.67	45.17
Wire rods, Pittsburgh...	48.00	48.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	2.10	2.10	2.10	2.30
Light rails at mill...	1.80	1.80	1.80	2.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.28	2.28	2.28	2.52
Iron bars, Chicago...	2.10	2.10	2.10	2.40
Steel bars, Pittsburgh...	2.10	2.10	2.10	2.40
Steel bars, Chicago...	2.20	2.20	2.20	2.50
Steel bars, New York...	2.44	2.44	2.44	2.69
Tank plates, Pittsburgh...	2.00	2.00	2.00	2.35
Tank plates, Chicago...	2.30	2.30	2.30	2.60
Tank plates, New York...	2.34	2.34	2.34	2.59
Beams, Pittsburgh...	2.10	2.10	2.10	2.35
Beams, Chicago...	2.30	2.30	2.30	2.60
Beams, New York...	2.44	2.44	2.44	2.69
Steel hoops, Pittsburgh...	2.40	2.40	2.50	2.90

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Mar. 24, 1925	Mar. 17, 1925	Feb. 24, 1925	Mar. 25, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.40	3.40	3.50	3.75
Sheets, black, No. 28, Chicago dist. mill...	3.70	3.70	3.70	...
Sheets, galv., No. 28, P'gh.	4.60	4.60	4.75	4.90
Sheets, galv., No. 28, Chicago dist. mill...	4.85	4.85	4.85	...
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	2.70	2.90
Sheets, blue, 9 & 10, Chicago dist. mill...	2.80	2.80	2.80	...
Wire nails, Pittsburgh...	2.85	2.85	2.85	3.00
Wire nails, Chicago dist. mill...	2.95	2.95	2.95	...
Plain wire, Pittsburgh...	2.60	2.60	2.60	2.75
Plain wire, Chicago dist. mill...	2.70	2.70	2.70	...
Barbed wire, galv., P'gh.	3.55	3.55	3.55	3.80
Barbed wire, galv., Chicago dist. mill...	3.65	3.65	3.65	...
Tin plate, 100 lb. box, P'gh.	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

	Mar. 24, 1925	Mar. 17, 1925	Feb. 24, 1925	Mar. 25, 1924
Carwheels, Chicago...	\$16.50	\$17.00	\$19.00	\$18.50
Carwheels, Philadelphia...	18.50	18.50	19.00	18.50
Heavy steel scrap, P'gh...	18.00	18.00	18.50	18.00
Heavy steel scrap, Phila...	16.00	16.00	17.00	16.50
Heavy steel scrap, Ch'go...	16.00	16.50	17.75	15.50
No. 1 cast, Pittsburgh...	18.00	19.00	19.00	20.00
No. 1 cast, Philadelphia...	18.00	18.00	18.50	18.50
No. 1 cast, Ch'go (net ton)	18.00	18.00	19.00	19.50
No. 1 R.R. wrot. Phila...	19.00	19.00	20.00	19.00
No. 1 R.R. wrot. Ch'go (net)	14.50	14.50	16.00	13.50

Coke, Connellsville, Per Net Ton at Oven:

	Mar. 24, 1925	Mar. 17, 1925	Feb. 24, 1925	Mar. 25, 1924
Furnace coke, prompt...	\$3.25	\$3.25	\$3.50	\$4.00
Foundry coke, prompt...	4.00	4.25	4.25	4.75

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.87½	14.62½	15.00	13.87½
Electrolytic copper, refinery	14.00	14.25	14.50	13.50
Zinc, St. Louis...	7.30	7.32½	7.55	6.37½
Zinc, New York...	7.65	7.47½	7.90	6.72½
Lead, St. Louis...	8.65	8.72½	8.90	8.85
Lead, New York...	8.90	9.00	9.20	9.00
Tin (Strait), New York...	53.02½	53.00	57.00	52.50
Antimony (Asiatic), N. Y.	14.00	15.75	18.50	12.00

THE IRON AGE Composite Prices

March 24, 1925, Finished Steel, 2.531c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	March 17, 1925, 2.581c. Feb. 24, 1925, 2.546c. March 25, 1924, 2.731c. 10-year pre-war average, 1.689c.
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March 24, 1925, Pig Iron, \$21.88 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	March 17, 1925, \$22.13 Feb. 24, 1925, 22.50 March 25, 1924, 22.73 10-year pre-war average, 15.72
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1923	High	1924	1925	Low	1923
2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6	2.531c., March 17	2.460c., Oct. 14	2.446c., Jan. 2
\$20.86, March 20	\$22.88, Feb. 24	\$22.50, Jan. 13	\$21.88, March 24	\$19.21, Nov. 3	\$20.77, Nov. 20

is noted in the steel situation at Youngstown, that district running very heavily to that product.

Another blast furnace in the Youngstown district has been banked and coke shipments to another steel works furnace there have been suspended. The Carnegie Steel Co. is still making ingots at close to 90 per cent of capacity, but because of recession in the Youngstown district, independent operations in the Greater Pittsburgh district now are not more than 80 per cent of capacity. This would give a general average for this district of about 82 per cent as compared with slightly more than 85 per cent a week ago.

The prospect is for a further decrease in production, but no one looks for the decline to be as great or as prolonged as was the case a year ago. It is figured that

consumption will be better in the next three months than it has been so far this year, and as there has not been nearly as much stocking of steel by the manufacturers as a year ago, plant operations will be sensitive to any improvement in the demand. Much of the production in the forepart of 1924 went into stock on manufacturers' yards and was drawn upon when demand grew better during the summer.

Prices of the steel-making grades of pig iron have been marked down 50c. a ton, this being due to the recent wage reduction in the Connellsville district with its attendant drop in the cost of coke. Pig iron prices were advanced \$1 a ton to cover the high coke costs incident to the wage increase of last December, and now that this has been wiped out, merchant pig iron

producers are passing along the saving. It is only 50c. at this time, but it is pointed out that prices previously had worked off 50c. There is so little demand for pig iron that even the new quotations must be regarded as nominal and untested.

While the wage reduction in the Connellsville district has occasioned trouble at some of the plants, it has generally been accepted and the belief prevails that the movement will be successful because the demand for beehive coke is not of a large or pressing character and the men will not be able to do as well in the matter of employment outside as in the Connellsville district. Coke is plentiful for blast furnace use because the steel companies which have put off blast furnaces now have by-product coke for sale and there is a strong possibility that two and possibly three merchant furnaces now running on beehive coke will go out of blast around April 1.

The scrap market has reversed itself since a week ago, as consumptive buying has been very limited and the prospect of lower steel works operations has made dealers a little more anxious for orders.

Pig Iron.—It is hard to recall a time when consumers were less interested in pig iron than has been the case in the past week. Consumers seem to have all the iron they are likely to require for at least the next 30 days and it has required real salesmanship for producers and sellers to get even carload lot orders. The wage scale adjustment recently announced by the larger independent Connellsville coke producers being regarded as completed and the coke price established on the basis of the new wage rates, merchant producers of the steel making grades of pig iron have reduced prices 50c. per ton to \$21, Valley furnace, for basic and \$22, Valley furnace, for Bessemer grade. This with the recent decline of 50c. in those grades puts the market \$1 per ton below the prices based on the higher coke costs, and that was the extent of the advance produced by the December advance in the Connellsville wage scales. While small sales of Bessemer iron have been made at \$22, Valley furnace, no sales of basic iron have been noted at \$21, and in a large degree the new quotations, like the former ones, represent merely the ideas of producers. The test of demand still is to be applied. Carload lots of foundry iron have been moving at \$21, Valley furnace, for No. 2, creating the inference that less might be done on a sizable tonnage.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$21.00
Bessemer	22.00
Gray forge	20.50
No. 2 foundry	21.00
No. 3 foundry	20.50
Malleable	21.50
Low phosphorus, copper free	29.00

Ferroalloys.—There is not enough business to clearly define prices. Quotations are those that have been named for several weeks past and have not found much basis in sales. Consumers quite generally contracted well ahead on ferromanganese at well below today's prices and have not had much occasion to supplement such purchases. Long time contracts for 50 per cent ferrosilicon were made at \$82.50, delivered, and only a few small sales have been at \$85, to which the market was advanced later. Some buying of spiegeleisen supplementary to contracts has been noted, but usually at the same prices at which the contracts were written. Prices are given on page 939.

Semi-Finished Steel.—The situation locally is deadlocked because of the inability of buyers and sellers to get together on prices for second quarter tonnages. Makers of sheet bars want \$39, Pittsburgh or Youngstown, for open-hearth bars, while sheet makers who buy their steel figure they cannot pay more than \$36 and operate profitably on today's sheet prices. Sheets are back to about the prices of late last year or somewhat below and at that time the sheet bar market was about \$37. That is the buyer's argument. The seller's position is that low-priced sheet bars would only serve to make the sheet situation worse from a price standpoint and most sellers of sheet bars are producers of sheets.

Strip makers, who are the principal buyers of billets and slabs, appear to have ordered more tonnages for first quarter than their orders for finished material called for and they now either have stocks or some tonnages still due them on old orders. An appraisal of today's possibilities suggests \$37, Pittsburgh, as the price of 4-in. billets or slabs of the equivalent dimensions. Wire rods are doing fairly well at \$48, base, Pittsburgh or Cleveland. Skelp at 2.10c. is untested. Carnegie Steel Co. produced ingots last week at close to 90 per cent of capacity, but the average of independents in this and nearby districts is nearer 80 per cent. Prices are given on page 939.

Wire Products.—Shipments again were heavy by local mills last week, but reports about new business vary somewhat. Some producers say that incoming business was equal to shipments, while others report new business to have been less than the shipments. The latter report is the more common one, but it is explained that only in a few parts of the country has the weather been favorable to consumption of such lines as barbed wire, staples and fence and that distributors must necessarily reduce their stocks to some extent before making additional purchases. As to prices, there continues to be irregularity both as to the ideas of the different producers and among the products. Testimony is strong that the market is well established at \$2.60, base, per 100 lb. for plain wire and that specifications are coming along well at that price. Deliveries against lower-priced nails, however, have strung out to such an extent that only a few mills have completed shipments and jobbers still are well enough supplied to be able to get along without drawing heavily against contracts made at \$2.85. Prices are given on page 938.

Rails and Track Supplies.—A fairly good demand is noted for spikes and other track supplies, but it is noted that sales mostly are at the minimum quotations and that \$2.80, base, for large spikes is becoming the more common sales price. There is a good deal of competition for light rail orders and it is only on small tonnages that buyers have to pay more than 1.80c., base, for billet rails. Prices are given on page 938.

Tubular Goods.—Pipe business still is good compared with most other finished products, but here, as with other lines, the accumulation of backlog business is a little difficult, since jobbers are not ordering very far ahead, finding assurance in the fact that they are well stocked, that there is some idle capacity and that there is no danger of higher prices in the near future. Rather, they hold that as prices have held for almost two years on steel and for more than two years on wrought iron pipe, and as in that time most other products have declined, there is a greater possibility of lower prices, especially as additions to steel pipe capacity in the past year have been substantial. Boiler tubes are doing fairly well as to sales, but the price situation still leaves something to be desired. Discounts are given on page 938.

Sheets.—This division of the market still is paying the penalty of the heavy production in December, January and February, when the independent output averaged 92 per cent of capacity and this at a time when consumption warranted production not more than 80 per cent. Consumers got well filled up and independent companies got rid of much of their bookings. As was to be expected, competition for business increased and prices not only failed to hold, but actually have gone under the levels of late last year in the cases of black sheets and automobile body sheets. The latter at 4.40c. are \$4 a ton under the price of last November, and black sheets at 3.40c. are \$2 a ton under the common price of that time. The market has gained in activity in automobile sheets, but still is rather quiet on the common finishes, prices of which are still uncertain. The sheet industry this week is operating at about 65 per cent of capacity and that is a fair measure of production. Prices are given on page 938.

Tin Plate.—Container manufacturers still are pressing for shipments, and some of the larger ones already are showing anxiety about June shipments, which ordinarily would not be specified until April 15. Weather conditions still are to be reckoned in the consumption

of tin plate for food containers, but the can makers evidently are figuring it will be favorable to a big pack. This is evident not alone from the pressure for deliveries against regular contracts, but in a good demand for stock items, which ordinarily does not develop until the packing season is well under way. Western mills of the American Sheet & Tin Plate Co. are so heavily obligated that this interest has found it necessary to transfer a good deal of business to Eastern plants to meet the shipping demands of its large customers, and this means some absorption of freight, a condition that was not thought likely when Pittsburgh was abolished as a sole basing point on steel prices. The price is unchanged.

Cold-Finished Steel Bars and Shafting.—With most makers in this district business is better to the extent that specifications against first quarter contracts are somewhat larger than they were recently. Enlargement of automobile production is a helpful factor, and it is reported that agricultural implement manufacturers are releasing tonnages a little more freely. Most of the shipments being against first quarter contracts, carry a price of 2.70c., base, mill, Pittsburgh district. Only small lots have sold at a higher price.

Steel and Iron Bars.—Orders for steel bars in the past week have been slightly more numerous than in the week before, but they have run entirely to small lots for early delivery and have not appreciably helped mill order books. Buyers have not had to go above 2.10c. base, Pittsburgh district mills, but neither have mills indicated any tendency to shade that price. Iron bars are steady at recent levels. Prices are given on page 938.

Structural Material.—Fabricating companies are specifying fairly freely as more open weather permits construction work. Inquiry for fabricated steel is reported to be gaining, but this does not seem to be reflected in the demand for plain material, new business in which still is light. Mills are holding to 2.10c. base, Pittsburgh, for large structural shapes, but no very large tonnages are moving at that figure. Prices are given on page 938.

Plates.—Shipments on old orders still exceed incoming business and competition for orders is sharper than it has been and only on very small tonnage is a price higher than 2c., base Pittsburgh, now obtainable. Not many orders for cars, tanks and other plate consuming products are coming into this district, and new orders for large outside diameter pipe are not large enough to provide much engagement of plate mill capacity. Prices are given on page 938.

Hot-Rolled Flats.—The more general report about business is one of improvement, more especially in the direction of second quarter contracts. On hoops, bands and strips, 6 in. and narrower, the market is quotable at 2.40c., base, plus the new card of extras. On wide material the price is not so well defined, as that kind of material still is subject to competition from skelp and sheets. The Ford Motor Co. is expected to close this week on about 15,000 tons of strips for second quarter shipment. Prices are given on page 938.

Cold Rolled Strips.—The price of 4.15c., base Pittsburgh, on this product has pretty well disappeared, except on small and unattractive orders. The general market is 4.15c., base Pittsburgh, but it is noted that there is no shading of that price, even on large tonnages.

Bolts, Nuts and Rivets.—There is a fair day-to-day demand for these products, but no large orders are coming out and makers are meeting all demands upon them with considerable ease. Prices are holding well because it is claimed they represent only getting back a new dollar for an old one. Prices and discounts are given on page 939.

Coke and Coal.—Furnace coke has eased off to \$3.25 per net ton at ovens for either spot or second quarter shipments. There was some shortening in the supply over the end of last week of beehive oven coke, due to the fact that at some of the plants some men stayed away on account of the wage reduction and operating schedules were affected. But there was no shortage,

because steel companies with by-product plants have been curtailing pig iron production and had by-product coke for sale. These companies are offering by-product coke for second quarter shipment and providing competition for the beehive oven product. Foundry coke also is easier and now is not quotable over \$4.75 per net ton at ovens for the best brand, while standard 72-hr. fuel is available as low as \$4. Foundries have been looking for some benefit from the wage reduction and accordingly have been sparring with buyers. The coal market shows no improvement as regards either demand or prices.

Old Material.—The market here has again reversed its course, and advances of the previous week in the steel works grades have disappeared in the week under review. Sales of heavy melting steel have been made to consumers at \$18.50 down to \$18 and today the latter figure was all that could be obtained. Compressed sheets now are quotable at \$17 to \$17.50. Consumptive buying at best is sporadic, as buyers seem to be figuring on lighter rather than heavier operations in the near future. It is not a good market for dealers, as they have few contracts to fill and prices are too high for yard purchases.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$18.00 to \$18.50
No. 1 cast, cupola size.....	18.00 to 18.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.00 to 20.00
Compressed sheet steel.....	17.00 to 17.50
Bundled sheets, sides and ends..	16.00 to 16.50
Railroad knuckles and couplers..	20.50 to 21.00
Railroad coil and leaf springs...	20.50 to 21.00
Low phosphorus blooms and billet ends	23.00 to 23.50
Low phosphorus plate and other material	21.50 to 22.00
Railroad malleable	18.00
Steel car axles	21.00 to 21.50
Cast iron wheels	19.00 to 19.50
Rolled steel wheels	20.50 to 21.00
Machine shop turnings	14.50 to 15.00
Short shoveling turnings	14.50 to 15.00
Sheet bar crops	20.00 to 20.50
Heavy steel axle turnings	17.50 to 18.00
Short mixed borings and turnings	14.50 to 15.00
Heavy breakable cast	15.50 to 16.00
Stove plate	14.50 to 15.00
Cast iron borings	14.50 to 15.00
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	18.50

Little Change in Active Capacity in the Mahoning Valley

YOUNGSTOWN, March 24.—The Republic Iron & Steel Co. announces withdrawal from blast of a blast furnace in its Haselton group, leaving three of five stacks in action in this group. The company has also reduced the number of its active open-hearth furnaces by one, leaving nine in commission.

In the Mahoning Valley, steel ingot production is being maintained at 75 per cent. The Carnegie Steel Co. and the Trumbull Steel Co. are operating steel departments close to normal. Finishing mills of the Sharon Steel Hoop Co. are active at 95 per cent or better.

Satisfactory rates of production are being maintained by rod, wire, puddling and strip mill departments, but weak spots in finished steel lines are represented in sheets, plates, skelp and pipe.

Denoting irregularity in the sheet market is the sharp curtailment this week in active capacity, the number of mills under power in the Mahoning Valley dropping to 87, of a total of 127. Suspensions have been made by the Youngstown Sheet & Tube Co., the Republic company and the Thomas Sheet Steel Co., accounting in large measure for the curtailment.

In this district, the Sheet & Tube company has 16 sheet units under power; the Newton Steel Co., 16; Republic, 8; Falcon Steel Co. and Mahoning Valley Steel Co., 8 each; Thomas Sheet Steel Co., 6, and the Waddell Steel Co., 4.

The Trumbull Steel Co. is operating its strip mill department at 80 per cent, sheet mills at 90 per cent and tin plate capacity in full.

The Sharon Steel Hoop Co. has 9 sheet mills and 4 strip mills in action.

Chicago

Buyers Limit Orders to Early Needs—Railroad Business Still a Feature

CHICAGO, March 24.—The blowing out of a blast furnace at Joliet marks the first recession in production in this district, reducing the number of active steel works stacks to 32 out of 34. The Joliet unit is a small one, however, and was employed on Bessemer iron. Steel ingot output is little affected and remains at close to 100 per cent of capacity. Rolling mill operations are somewhat more irregular than heretofore, this being particularly true of plate capacity. The maximum possible output of ingots, of course, is never sufficient to employ all rolling capacity at 100 per cent.

Demand for sheets has also been disappointing, and it is possible there may be some curtailment in sheet mill operations also before the output of ingots is materially altered. At present writing, all of the 28 hot mills of the local independent are still active. Forward commitments in steel bars remain heavy and local mills still have fair backlogs in structural shapes. Specifications, however, are commencing to lag and new business is in smaller volume. At the same time, the pressure for business by outside producing centers is becoming increasingly insistent in all neutral territories. Even in Chicago itself, Eastern mills are meeting the prices of local mills on plates, shapes and bars.

Shapes and plate prices are not any too steady and sheet prices have broken \$2 to \$4 a ton. Wire products are also weaker and are now generally available at the prices ruling before the last advance.

Buyers in practically all lines are limiting their purchases to immediate needs and there now appears to be little hope for a second quarter buying movement. It is to be noted in this connection, however, that Chicago producers are better fortified than mills in other centers with prior commitments which will overlap into second quarter and in some cases will run through first half. To what extent these backlogs will sustain operations is still an unanswered question; in some instances, tardy specifications are rendering operations uncertain even though mills are comfortably booked.

Meanwhile railroad buying continues to be a feature of the market worthy of comment. The Chesapeake & Ohio has placed 30,000 tons of rails, of which 24,000 tons was divided between the local mills. The Pennsylvania has put out an inquiry for 10,000 tons of tie plates. Railroad car buying is light, but over 1100 cars have been ordered by tank line companies. Western carriers are showing increasing concern over a recent decline in their freight traffic. The Chicago & North Western, which just placed its 1925 bridge work, 3500 tons, has reserved the privilege of reducing that tonnage before the close of the current week. Among fabricating awards the outstanding item is the Stevens Hotel, Chicago, 18,000 tons, which was placed with the American Bridge Co. subject to the placing of the general contract upon which final action will be taken tomorrow.

Encouragement is found in the prospects for road building and steady improvement in the output of automobile and implement manufacturers. It is estimated that over 200,000 tons of reinforcing steel will be required in highway construction to be undertaken in this country this year. The Oliver Chilled Plow Co., South Bend, Ind., is operating at 85 per cent of capacity with 2400 employees. Other implement plants are also doing well, particularly those making tractors. The automobile industry is enjoying a seasonal pickup, but is still buying cautiously.

The scrap market, which is regarded by many as a business barometer, continues to decline.

Pig Iron.—Prices of local iron remain unchanged, although at outlying points where the competition of outside producing centers is encountered, some concessions have been made. However, 2500 tons of malleable for second quarter delivery to a central Michigan melter was lost to a Lake Erie producer, who is said to have quoted \$21.50 base, furnace. The freight in this instance was 25c. per ton in favor of Chicago. To the west and south, St. Louis competition is encountered, prices as low as \$23.50, f.o.b. Granite City, being reported. An inquiry from Wisconsin for 4000 to 5000 tons of foundry and malleable is expected to give Chicago furnace prices the acid test. Meanwhile sales at the prices quoted below are confined to stray carload lots. A sale of 200 tons of Southern iron for barge and rail shipment has been made at a price which would figure \$25.68 for delivery in Chicago. Southern foundry for all rail shipments, however, is now available at a low price, a Tennessee furnace quoting \$19 base, Birmingham, or \$25.01, delivered Chicago. Alabama makers are said to be holding to \$21 base, Birmingham. Silvery is weak, with concessions of \$1 or more a ton not infrequent. A Michigan automobile manufacturer is inquiring for 400 tons.

Quotations on Northern foundry, high phosphorus, malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$24.00
Northern No. 1 foundry, sil. 2.25 to 2.75	25.00
Malleable, not over 2.25 sil.	24.00
Basic	24.00
High phosphorus	24.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	25.68
Southern No. 2, sil. 1.75 to 2.25 ..	\$25.01 to 27.01
Low phos., sil. 1 to 2 per cent, copper free	33.29 to 33.79
Silvery, sil. 8 per cent	35.29
Electric ferrosilicon, 14 to 16 per cent	45.00 to 47.42

Ferroalloys.—Outside of a carload inquiry for ferromanganese, the market is without features.

We quote 80 per cent ferromanganese, \$122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$40.58, delivered.

Plates.—Mills find their chief source of encouragement in prospective car purchases by the railroads. Inquiries for 7000 freight cars are now actively in the market. While specifications against old commitments continue to come from the car builders, these have been declining and local mills have caught up on their bookings to the extent that they are now able to give early delivery. In fact, some Chicago plate capacity has been idle of late. The pressure for business by outside plate mills is more and more insistent, being particularly noticeable in neutral territory east of Chicago. However, Eastern mills continue to meet local prices in Chicago also. No new oil storage tank work is reported and an inquiry from the Standard Oil Co. for heads for 37 cracking stills at Whiting, Ind., calls for a total of less than 100 tons of plates.

The mill quotation is 2.30c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—An award of 18,000 tons to the American Bridge Co. for the Stevens Hotel, Chicago, is conditional upon the placing of the general contract. The same fabricator has been awarded 3500 tons by the Chicago & Northwestern for 1925 bridge work, but the road may decide to reduce this tonnage owing to a decline in its freight traffic. A number of large fresh projects have come into the market, notably an auditorium at Minneapolis, 2600 tons, and an office building at Cedar Rapids, Iowa, 1200 tons. Competition among fabricators is increasingly severe. Plain material prices are unchanged but unsteady. The mills are booking less new business and outside producers are not only increasingly active in intermediate territories, but are meeting the prices of local makers in Chicago.

The mill quotation on plain material is 2.30c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—Local mills have heavier bookings in soft steel bars than in other forms of finished steel. In fact, tonnage now on contract is equal to several months' production. Specifications, however, are not so heavy as in February, and new business is light. Furthermore, competition with outside producing centers is increasingly keen. Chicago mills cannot hold their trade in territory intermediate between this city and Pittsburgh unless they quote prices which figure back to less than the ruling local price. In this city Eastern mills are meeting the price of local makers, absorbing the full freight disadvantage to do so. New business in bar iron is light, with prices unchanged at 2.10c., Chicago.

Mill prices are: Mild steel bars, 2.20c.; common bar iron, 2.10c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.70c.

Sheets.—Specifications are lacking and new business is light. Price weakness has become more pronounced and concessions of \$2, \$3 and \$4 a ton below the last advance are more numerous. In fact, it is doubtful whether any business is now being booked at more than 3.70c., f.o.b. Chicago district mill, for black, 2.80c. for blue annealed and 4.85c. for galvanized. Competition is keenest in neutral territory to the East, South and Southwest.

Chicago delivered prices from mill are 3.75c. for No. 28 black, 2.85c. for No. 10 blue annealed, 4.90c. for 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—Specifications are disappointing and new business is restricted. Prices rather generally have declined to where they were before the last advance. Wire nails are notably irregular and on cement coated nails a Western mill has quoted as low as 2.10c., or \$3 a ton below the price named by most Chicago district mills. The final appearance of rain in Texas is expected to release business from that territory and reconstruction work in the tornado swept sections of Illinois and Indiana will no doubt call for quantities of nails, wire, sheets and other products. Ruling prices on wire nails now appear to be \$2.95, f.o.b. Chicago district mills; on bright plain wire, \$2.70. For other mill prices see page 938.

Rails and Track Supplies.—The Chesapeake & Ohio has placed 30,000 tons of rails, of which approximately 12,000 tons each went to the two local mills and 6000 tons to the Bethlehem Steel Co. Encouraging bookings are reported in angle bars, tie plates and rolled steel wheels. The Pennsylvania is inquiring for 10,000 tons of tie plates. A local mill has booked an order for 450 tons of 25-lb. rails.

Standard Bessemer and Open-hearth rails, \$43; light rails, rolled from billets, 1.90c. to 2c., f.o.b. makers' mill.

Standard railroad spikes, 3c. mill; track bolts with square nuts, 4c. mill; steel tie plates, 2.45c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.45c. base.

Cast Iron Pipe.—Although as low as \$39 base Birmingham was quoted at both Detroit and Milwaukee, where large tonnages were involved, \$40 appears to be about as low as sellers care to go on the ordinary run of business. Detroit, which rejected the bids taken on March 9, will take fresh figures March 26 on 500 tons of 12-in., 1140 tons of 16-in., 4460 tons of 24-in., 6340 tons of 30-in. and 425 tons of 42-in. Highland Park, Mich., has awarded 265 tons to James B. Clows & Sons. Oak Park, Ill., has placed 307 tons with the National Cast Iron Pipe Co. Robinadale, Minn., was prevented from taking action in 500 tons on March 18 by an injunction obtained by property holders. Waukegan, Ill., took bids yesterday on 400 tons.

Chicago, 570 tons of 8-in., bids to be in March 27. Oakpark, Ill., 222 tons of 12-in., 85 tons of 8-in. and 144 ft. of 6-in., March 17.

Muskegon, Mich., 100 tons of 6-in., March 20. Robinsville, Minn., 500 tons, March 18.

We quote per net ton, f.o.b. Chicago, as follows:

Water pipe, 4-in., \$51.20 to \$52.20; 6-in. and over, \$47.20 to \$48.20; Class A and gas pipe, \$4 extra.

Bolts and Nuts.—Specifications are heavy against first quarter contracts expiring March 31. Buyers, however, are hesitant about contracting for second quarter and are placing new orders sparingly.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to $\frac{1}{2}$ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to $\frac{1}{2}$ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, squares, tapped or blank, \$3.50 off; hot pressed nuts, hexagons, tapped or blank, \$4 off; coach or lag screws, 60 per cent off.

Cold-Rolled Strips.—The market is weak, with 4c., f.o.b. Cleveland, more frequently quoted.

Reinforcing Bars.—With the opening up of the building season, there is increasing pressure on concrete bar dealers for shipments. Bar distributors have been unable to build up stocks and are seriously hampered in their operations by tardy deliveries from the mills. Bids will close on the Stevens Hotel, Chicago, requiring 1600 tons this week. Lettings include:

Illinois Central Railroad, improvements at Riverdale, Ill., 500 tons to Truscon Steel Co.

Morrell Packing Co., beef killing plant, Sioux Falls, S. D., 400 tons to Kalman Steel Co.

United States Engineer's office, Milwaukee, Wis., 250 tons of rail steel to Calumet Steel Co.

Apartment building, 15 East Ohio Street, Chicago, 300 tons of rail steel to Inland Steel Co.

United States Reclamation Service, Denver, Colo., 200 tons to Colorado Fuel & Iron Co.

Illinois Central Railroad, coaling station, Markham Yards, Chicago, 100 tons to Barton Spiderweb System Co.

Pending work includes:

United States Veterans' Hospital, Great Lakes, Ill., 500 tons, general contract awarded to Murch Bros., St. Louis.

Section B, municipal sewer, St. Paul, Minn., 500 tons, new figures being taken.

Medical building, University of Iowa, Iowa City, 500 tons, Madson Construction Co., Minneapolis, low bidder on general contract.

Plankinton Packing Co., plant addition, Milwaukee, 300 tons, general contract awarded to Dahlman Construction Co., Milwaukee.

Ascher's Terminal Theatre, Chicago, 200 tons.

Howard Theatre, Chicago, 150 tons, Duffy & Noonan, general contractors.

Old Material.—Consumer buying is limited and prices have again given way. With a decline in mill operations apparently inevitable, dealers see little to warrant a bullish attitude on the market. The last mill purchase of heavy melting steel, a small one, was at \$16.50 delivered. Reduced purchases of scrap by foundries are believed to reflect a curtailment in melt. Railroad offerings include the Burlington, 6000 tons; the Belt Railroad of Chicago, 700 tons; the Monon, 500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$18.00 to \$18.50
Cast iron car wheels	16.50 to 17.00
Relaying rails, 56 and 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	18.50 to 19.00
Railroad tires, charging box size	19.00 to 19.50
Railroad leaf springs, cut apart	18.50 to 19.00
Rolls for rolling	17.50 to 18.00
Steel rails, less than 3 ft.	18.50 to 19.00
Heavy melting steel	16.00 to 16.50
Frogs, switches and guards cut apart	14.50 to 17.00
Shoveling steel	15.75 to 16.25
Drop forge flashings	11.50 to 12.00
Hydraulic compressed sheets	13.50 to 14.00
Axle turnings	14.25 to 14.75
Steel angle bars	17.50 to 18.00
Steel knuckles and couplers	18.50 to 19.00
Coil springs	20.00 to 20.50
Low phos. punchings	17.50 to 18.00
Machine shop turnings	10.50 to 11.00
Cast borings	13.50 to 14.00
Short shoveling turnings	13.50 to 14.00
Railroad malleable	19.00 to 19.50
Agricultural malleable	17.50 to 18.00
Per Net Ton	
Iron angle and splice bars	18.00 to 18.50
Iron arch bars and transoms	19.00 to 19.50
Iron car axles	24.00 to 24.50
Steel car axles	14.50 to 17.00
No. 1 busheling	12.50 to 13.00
No. 2 busheling	9.50 to 10.00
Pipes and flues	10.00 to 10.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	14.25 to 14.75
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	16.50 to 17.00
No. 1 agricultural cast	16.50 to 17.00
Locomotive tires, smooth	16.50 to 17.00
Stove plate	14.00 to 14.50
Grate bars	12.50 to 14.00
Brake shoes	12.50 to 14.00

New York

Steel Operations Show Slight Decline—Pig Iron Buying Limited

NEW YORK, March 24.—Foundries in Eastern territory differ widely as to present activities and requirements for pig iron. Some foundries have nearly exhausted their stocks of pig iron and are buying. Seven of this class purchased 4200 tons from one firm within a few days, all for delivery prior to April 30. On the other hand, many foundries are not buying and some of them have enough iron on hand to meet their requirements through the second quarter. The Ingersoll-Rand Co. has purchased 1000 tons for delivery in 30 to 45 days, but most of the buying has been of smaller tonnages. Prices are soft at \$23, furnace, for No. 2 plain in eastern Pennsylvania and \$21.50 to \$22 at Buffalo.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	\$25.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	26.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	26.02
Buffalo, sil. 1.75 to 2.25	\$26.41 to 26.91
No. 2 Virginia, sil. 1.75 to 2.25	29.44

Ferroalloys.—New business in ferromanganese and spiegeleisen is still confined to a few inquiries and sales of small and carload lots at regular prices. Specifications on contract for ferromanganese are reported as heavy in most cases with very few requests to delay shipments. There is very little new business in electric ferrosilicon or in standard ferrochromium though specifications on contracts are fairly satisfactory.

Cast Iron Pipe.—The determined effort of domestic producers of gas and water pipe to eliminate the imported product continues. Bids will be opened on 12,000 tons of pipe for Oneida, N. Y., March 27. In view of the low prices at which domestic makers took the recent award of the City of New York, there is some confidence that the award will be to an American bidder. Small purchases by private companies continue to accumulate. Lack of the usual demand for soil pipe for spring building activity has left that market weak with a tendency on the part of some sellers to make concessions from the current schedule of discounts, generally about 2½ points. Scarcity of business leaves the current discounts largely nominal.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$52.60 to \$53.60; 4-in. and 5-in., \$57.60 to \$58.60; 3-in., \$67.60 to \$68.60, with \$5 additional for Class A and gas pipe. Discounts on both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 40 to 41¼ per cent off list; heavy, 50 to 51¼ per cent off list.

Warehouse Business.—A reduction of 15c. base brings box annealed black sheets to 4.60c. and galvanized to 5.60c., the most common quotations. This was expected to come in the wake of softening in mill prices. In sheet demand there was a revival, but this soon spent itself when it was found that mills would offer good delivery. Considerable price cutting is indulged in and there is reluctance in the attitude of buyers, since they feel that nothing will be lost by waiting. Acceleration from spring demand is scarcely perceptible, except in structural and allied lines. An asking price of 3.15c. in reinforcing bars catches little interest. We quote boiler tubes per 100 ft. as follows:

Lap welded steel tubes, 2-in., \$17.33; seamless steel, 2-in., \$20.24; charcoal iron, 2-in., \$25; 4-in., \$67.

Finished Iron and Steel.—Specifications are lagging somewhat, especially on those products on which the current market price has slipped back to the level at which first quarter contracts were made. A few second quarter contracts are being made, but for the most part neither mills nor buyers are particularly anxious to make contracts in view of the uncertain price situation. Bars continue firm at 2.10c., Pittsburgh, but other hot-rolled products are weak. An example of the firm attitude of the mills on bar prices is afforded by the bid of a Brooklyn jobber of about 2c., Pittsburgh, on

900 tons of reinforcing steel for a Newark job, against uniform quotations of several mills and concrete reinforcing bar companies of 2.10c. Current orders on plates are being entered at 2c., Pittsburgh, and shapes are being sold at the same figure, with the price none too strong. Sheets are weak and the recent minimum prices are now maximum. The range on black sheets is more nearly 3.40c. to 3.50c., the latter figure certainly being the top, and even 3.40c. has not been the minimum in all sales. The spurt in automobile sheet buying was short winded. One wire mill reported notable bookings in the past week. The Brooklyn Edison Co. building, requiring 10,000 tons of steel, the largest structural job of the week locally, was awarded to the Levering & Garrigues Co. Railroad car buying during the week has been unimportant.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.44c. to 2.54c.; plates, 2.34c. to 2.44c.; structural shapes, 2.44c. to 2.54c.

Coke.—For prompt delivery furnace grade is offered at as low as \$3, this obtaining on distress lots. A range of \$3 to \$3.50 per net ton at oven, seems representative.

Old Material.—Although the only purchase of the week of heavy melting steel by an eastern Pennsylvania consumer was a tonnage of heavy melting steel by the Bethlehem Steel Co., the purchase price was at \$16 per ton, delivered, showing no change from the market on previous purchases. Shipments are still going forward to Conshohocken, Pa., for which brokers are paying \$16 per ton, delivered. With heavy melting steel at its present level, dealers with yards are inclined to buy small lots of the better grades for stock. Specification pipe is being purchased for delivery to a Lebanon, Pa., consumer, generally at \$15.50 per ton, occasionally at \$16 per ton, delivered. Borings and turnings are still being shipped to Bethlehem at \$12.50 per ton and to Conshohocken, Pa., at \$13 per ton, delivered. The market on machine shop turnings and bundled sheets is down to \$13 per ton, delivered to Phoenixville, Pa. Stove plate ranges from \$13 per ton, delivered on a \$2.02 freight rate to \$13.50 per ton, delivered on a \$3.50 freight rate.

Buying prices per gross ton New York follow:

Heavy melting steel, yard.....	\$12.00 to \$12.50
Heavy melting steel, railroad or equivalent	12.50 to 13.00
Rails for rolling.....	14.50 to 15.00
Relaying rails, nominal.....	24.00 to 25.00
Steel car axles.....	18.50 to 19.00
Iron car axles.....	24.00 to 24.50
No. 1 railroad wrought.....	14.50 to 15.00
Forge fire.....	10.00 to 10.50
No. 1 yard wrought, long.....	13.50 to 14.00
Cast borings (steel mill).....	10.00 to 10.50
Cast borings (chemical).....	15.50 to 16.00
Machine shop turnings.....	9.50 to 10.00
Mixed borings and turnings....	9.00 to 10.00
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	11.75 to 12.25
Stove plate	10.00 to 11.00
Locomotive grate bars.....	12.00 to 12.50
Malleable cast (railroad).....	15.00 to 15.50
Cast iron car wheels.....	14.00 to 14.50
No. 1 heavy breakable cast.....	12.00 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.00 to \$16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.).....	13.00 to 13.50

More iron is melted in the cupola in Chicago than in any other foundry center in the world, said H. O. Lange, Ferguson & Lange Foundry Co., Chicago, at a special meeting of the Chicago Foundrymen's Club held at the City Club, Chicago, March 18. There are other producing points which may turn out a larger tonnage in castings of all kinds, but Chicago excels as a gray iron foundry center.

The development of belt conveyors is to be discussed by C. K. Baldwin, vice-president Robins Conveying Belt Co., New York, at a meeting on the evening of April 7 at the Mason Laboratory, Yale University, New Haven, of the local section of the American Society of Mechanical Engineers.

Boston

Pig Iron Prices Remain Unsettled—One 2000-Ton Inquiry

BOSTON, March 23.—So little business was transacted in pig iron the past week, that difficulty is experienced in determining the state of the market. It is definitely assured, however, that Buffalo iron, first \$23 a ton furnace base and later \$22, is now obtainable at \$21.50. Buyers maintain No. 2X can be bought at \$21.50, but the assumption is they have been asked to make offers on that basis and that no actual tonnages have been placed. No. 2X iron at \$22 furnace is \$26.91 delivered. Eastern Pennsylvania No. 2X has sold in a small way at \$23 furnace, or \$26.65 delivered, 25c. under the Buffalo delivered price, which lends color to buyers' assertions regarding prices. A Massachusetts melter is in the market for 2000 tons of No. 1X domestic iron, second quarter delivery. It is expected furnaces will shade prices on this business. Dutch and Continental irons are still obtainable at \$22 on dock Boston, duty paid. Small tonnages were offered the past week at a few cents per ton less. Local receipts of foreign iron this month total 6768 tons, consisting of 3485 tons Indian, 1473 tons Belgian, 1310 tons Dutch and 500 tons Scotch. Importations for 1925 to date aggregate 28,681 tons.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$26.65 to \$27.15
East. Penn., sil. 2.25 to 2.75.....	26.65 to 27.65
Buffalo, sil. 1.75 to 2.25.....	26.41 to 26.91
Buffalo, sil. 2.25 to 2.75.....	26.91 to 27.41
Virginia, sil. 1.75 to 2.25.....	29.92
Virginia, sil. 2.25 to 2.75.....	30.42
Alabama, sil. 1.75 to 2.25.....	31.60
Alabama, sil. 2.25 to 2.75.....	32.10

Cast Iron Pipe.—Bids will be opened next Monday for 1200 tons 48-in. pipe required by Boston. The Warren Foundry & Pipe Co. was awarded 400 tons 6-in. to 12-in. pipe by Brookline, Mass., and the Donaldson Iron Co. 350 tons 6-in. to 12-in. by Quincy, Mass. The latter city paid \$4 a ton more for domestic pipe than it could have secured French. The B. Nicoll Co. is the low bidder on 1200 tons 4-to 14-in. pipe required by Bridgewater, Mass., the company offering foreign pipe. Recently 1557 pieces of German pipe were received at this port, the first lot of such pipe to be landed in Boston. French pipe makers are understood to be well sold ahead. Prices on domestic cast iron pipe follow: 4-in., \$62.10 a ton delivered common Boston rate points; 6-in. to 12-in., \$57.10; 16-in. and larger, \$56.10. The usual differentials of \$5 on Class A and gas pipe are quoted. Some concessions are reported on large pipe, but the market for small appears firm.

Coke.—No improvement in the volume of specifications against first half by-product foundry coke contracts is reported. Foundries are absorbing storage stocks or taking in fuel in the smallest possible tonnages, in anticipation of lower prices next month. As near as can be ascertained, the movement of foundry fuel from New England ovens is approximately 25 per cent under that of a year ago. The movement a year ago could hardly be called normal. Both the New England Coal & Coke Co. and the Providence Gas Co. quote by-product foundry coke at \$12 a ton delivered in New England. It is expected both companies will open their books early in April for last half 1925 contracts.

Old Material.—Another week has passed without the anticipated spurt in steel mill buying materializing. New England yards are not disposed to sell at prevailing prices, consequently business is confined to odd cars of material secured from industrial plants. Consumers are still critical of everything purchased and usually demand an adjustment of prices. For Phillipsdale consumption \$11.50 was paid the past week for heavy melting steel, and for Weirton, \$12.50. Long bundled cotton ties brought \$8.50 on cars and short \$10.50. Some brokers offer \$9 for machine shop turnings, but \$8.50 seems to be the average extreme price. The market on 60 lb. rails for rerolling appears to be

\$11.50 to \$12.50, and on 80 lb. \$13 to \$13.50. A Portland, Me., plant is bidding \$20 delivered for shafting, or \$17.61 on cars Boston common rate points. That price is about \$1 under local brokers' quotations, yet the firm claims to be securing material. The General Electric Co. is in the market for 500 tons No. 1 machinery cast for its Lynn, Mass., plant. It recently bought 300 tons for its Everett, Mass., foundry.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	\$19.00 to \$20.00
No. 2 machinery cast	17.00 to 18.00
Stove plates	14.00 to 14.50
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.50 to \$12.50
No. 1 railroad wrought	14.00 to 14.25
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	11.00 to 11.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings, chemical....	13.50 to 14.00
Cast iron borings, rolling mill...	8.50 to 9.00
Blast furnace borings and turnings	8.00 to 8.50
Forge scrap	9.50 to 10.00
Bundled skeleton	8.50 to 10.00
Bundled cotton ties.....	8.50 to 9.50
Forged flashings	9.50 to 10.00
Shafting	17.50 to 18.00
Street car axles.....	17.50 to 18.00
Rails for rerolling	11.50 to 13.50
Scrap rails	11.50 to 12.50

Birmingham

Tennessee Furnaces Shade Market Where They Have Freight Advantage

BIRMINGHAM, ALA., March 24.—Birmingham furnace operators maintaining \$22 per ton on No. 2 foundry, hear reports that Tennessee furnace companies which have differentials in freight of \$1 or more per ton are offering their product at less than \$20 in territory where they have freight advantage. There is no definite information here as to Tennessee furnace companies' sales and their prices except inquiries state that iron is offered at less than Birmingham local price. Rockwood and LaFollette, Tenn., furnaces are reported offering iron less than Birmingham. Sixteen blast furnaces are on foundry iron in this State, nine on basic and one on ferromanganese; one furnace is being repaired for early operation; one furnace has been changed from basic to foundry iron. One furnace company has piled some iron during the past week, but it is against orders on books.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil....	\$21.50 to \$22.00
No. 1 foundry, 2.25 to 2.75 sil....	22.00 to 22.50
Basic	21.00 to 22.00
Charcoal, warm blast.....	30.00

Steel.—Steel fabricating plants of the Birmingham district are busy with structural steel work, much of it for local consumption and a large amount for nearby States. Structural steel in quantity is being used in buildings in Florida and several specifications in that State are being bid on by local plants. Additional rail orders have been received recently by the Steel Corporation subsidiary here. Steel bars, soft, quoted 2.25c. to 2.35c., Birmingham.

Coke.—Demand for coke improves and independent producers are watching production. Beehive foundry coke has sold as high as \$5.50 per ton lately in this territory. Iron and steel manufacturers need their own coke and some are still buying from independent sources. Addition to the plant of the Alabama By-Products Corporation, 25 ovens, will add materially to the output there.

Scrap.—Continued dullness is reported in the scrap market, no buying worth mentioning being done. Some consumers have asked for slowing down on delivery of old material due them on old contracts. Quotations, though weak, hold to the same levels as noted last week. Heavy melting steel at \$14 includes delivery in some instances. Hope is still expressed that the Tennessee company will buy on the open market for needs

in scrap, especially steels. These commodities are showing the greater weakness.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	14.00 to 15.00
Railroad wrought.....	13.00 to 14.00
Steel axles.....	18.00 to 19.00
Iron axles.....	19.00 to 20.00
Steel rails.....	14.00 to 15.00
No. 1 cast.....	17.00 to 17.50
Tramcar wheels.....	17.00 to 17.50
Car wheels.....	16.00 to 17.00
Stove plate.....	14.50 to 15.50
Machine shop turnings.....	8.00 to 9.00
Cast iron borings.....	8.00 to 9.00
Rails for rolling.....	16.50 to 17.00

Cincinnati

Weaknesses in Both Northern and Southern Pig Iron in a Quiet Market

CINCINNATI, March 24.—Further price weaknesses have developed in both Northern and Southern pig iron in the local market. Sales remain at a low level and inquiries are confined principally to small tonnages. Little second quarter business is being placed. Consumers are making purchases only to cover immediate needs and are inclined to hold off buying in the belief that they will benefit from further decreases in prices. The largest sale of the past week in Cincinnati territory was that of 750 tons of Northern foundry to Nordyke & Marmon, Indianapolis. An Ironton furnace sold 250 tons of foundry at \$22.50, furnace. A Dayton, Ohio, manufacturer purchased 500 tons of low phosphorus iron from a local dealer. The Commercial Steel Casting Co., Marion, Ohio, bought a car of low phosphorus iron. Inquiries include one from the Buick Motor Car Co., Flint, Mich., for 400 tons of 14 to 16 per cent ferrosilicon. A Ravenna, Ohio, manufacturer is inquiring for 100 tons of Northern foundry iron. The Louisville & Nashville Railroad is in the market for 640 tons of Southern iron and the Southern Railway is inquiring for 100 tons of Southern. Quotations in the Ironton district run from \$21.50, furnace, to \$22.50, furnace. Small tonnages have been sold at the latter figure. One furnace in Ironton territory is quoting \$21.50, furnace, but it is believed that this price would be lowered to \$21 if business of considerable tonnage develops. Southern iron prices also have weakened. Several Alabama furnaces are asking \$22, Birmingham, but are not selling any iron at that price. One Alabama furnace has reduced its price to \$21, Birmingham. Tennessee furnaces are asking \$20 and \$20.50, Birmingham, but some Tennessee iron has sold at \$18.50 and more can be had at \$19 for second quarter.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base).....	\$24.05 to \$25.05
Alabama fdy., sil. 2.25 to 2.75.....	24.55 to 25.55
Southern Ohio, silvery, 8 per cent.....	32.77
Southern Ohio fdy., sil. 1.75 to 2.25.....	23.77 to 24.77
Southern Ohio, basic (nominal).....	24.27
Southern Ohio malleable.....	24.27 to 25.27

Fluorspar.—During the past week, a local dealer disposed of a carload of fluorspar at \$19. There is an inquiry out from a steel company for 50 tons of fluorspar.

Reinforcing Bars.—Business has shown a little more activity, especially in the number of projects that are pending. The contract for the Cheviot School, Cheviot, Ohio, was awarded during the past week to the Bourne-Fuller Co. This requires about 100 tons. Pending jobs included the Norwood School, Norwood, Ohio, for about 80 tons; the Children's Hospital, 300 tons; the new building of the J. Charles McCullough Seed Co., Cincinnati, 500 tons; the Phelps Apartment Building, Cincinnati, 600 tons; hotel on Garfield Place, Cincinnati, for which Tietig & Lee, Cincinnati, are architects, 100 tons; the Masonic Widows and Orphans Home, Louisville, Ky., for which Joseph & Joseph, Louisville, are the architects. With the large number of jobs that will be let in the near future, the outlook for sales is encouraging. Prices are fairly firm at 2.10c., mill.

Structural Steel.—The local market is quiet, with

indications that there will be little change in the immediate future. There have been several small awards made during the past week. The only job of any consequence in volume of tonnage was that of the J. B. Campbell Co., Cincinnati, which is erecting additions to its plant. This company awarded a contract for about 250 tons to the General Iron Works, Cincinnati. Inquiries are reported to be scarce, building activities in this territory having failed to open up to any marked extent as yet. Prices are unchanged from 2.20c., Pittsburgh, for second quarter shipment and 2.10c., Pittsburgh, for immediate business.

Tin Plate.—Good consumption by can manufacturers is reported. Specifications against contracts are heavy and mills are operating at a big rate. Prices are the same.

Sheets.—The market has weakened perceptibly and prices have been affected accordingly. Buyers seem to be well covered at present and there has been little purchasing done in the past week. Specifications against contracts are fairly good, but new business is scarce. Concessions in price are being made by some companies to obtain orders. Second quarter contracts are not as numerous as had been hoped for. Jobbers state that their sales have been fair. Galvanized sheets are selling at 4.75c., Pittsburgh, for second quarter business, but prices as low as 4.60c., Pittsburgh, for immediate shipment are being quoted. The price of 4.85c., which has been the list price for several weeks, seems to have entirely disappeared. Orders for black sheets are being placed at 3.60c., Pittsburgh, for second quarter delivery, but March business is being booked for 3.50c., Pittsburgh. There has been little activity in blue annealed sheets to test the quotation of 2.70c. The same is true of auto sheets, quoted at 4.60c.

Plates, Shapes and Bars.—Sales have been somewhat spotty. Sellers have been unable to hold to the price of 2.20c., Pittsburgh, which they had believed would grow stronger as the second quarter approached. Contracts are being made for second quarter shipment to old customers at 2.10c. However, orders for small quantities are commanding the 2.20c. figure and companies have a considerable number of these orders on their books at present. Inquiries are fair, but the total volume of business being placed is limited.

Connellsville furnace, \$3.25 to \$3.75; foundry, \$4.25 to \$5.00; New River foundry, \$8.00 to \$8.50; Wise County furnace, \$4.00 to \$5.00; foundry, \$4.50 to \$6.00; by-product foundry, \$6.50 Connellsville basis.

Wire Products.—The nail market is unusually soft, due to low prices offered by several concerns. Buyers are well stocked for the present and, therefore, sales have been at a low point and inquiries have been few. Sales are being made at 2.85c., Pittsburgh, and the majority of the dealers are not inclined to go under this figure. However, it is reported that lower quotations are being made at Ironton, Ohio. The price competition, in view of the apparent weakness of the market, has not stimulated sales, which remain at a low level.

Warehouse Business.—Little change has taken place in the past week. Buying is increasing, especially in the Cincinnati metropolitan district, in which a sales improvement has been noted. The tonnage, however, is small and buyers are inclined to adhere to a policy of purchasing in a hand-to-mouth fashion, ordering only sufficient quantities to cover present needs. The volume of business is about the same as in February. No price changes have been made.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 2.95c.; shapes, 4.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, \$3.25 per 100 lb.; common wire nails, \$3.25 per keg base; cement coated nails, \$2.65 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$3.75 base; small rivets, 65 per cent off list.

Coke.—The coke market is quiet at present. Demand for foundry coke is not as active this month as last. The Louisville & Nashville Railroad has an inquiry out for 850 tons of foundry coke. Sales of domestic coke have dropped out due to seasonal inactivity. Prices are slightly weaker.

Old Material.—The scrap market is stagnant. Dealers report that sales have been especially light during the past week and inquiries are scarce. Consumers apparently are well covered for the present. The Southern, Norfolk & Western and Chesapeake & Ohio closed fair sized lists the past week. Some dealers are disinclined to sell at present prices, preferring to hold their material until the market is stronger. Prices have weakened in several items.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$14.00 to \$14.50
Scrap rails for melting.....	14.00 to 14.50
Short rails.....	18.00 to 18.50
Relaying rails.....	28.00 to 28.50
Rails for rolling.....	16.00 to 16.50
Old car wheels.....	14.00 to 14.50
No. 1 locomotive tires.....	17.00 to 17.50
Railroad malleable.....	16.50 to 17.00
Agricultural malleable.....	15.00 to 15.50
Loose sheet clippings.....	11.50 to 12.00
Champion bundled sheets.....	12.50 to 13.00
Per Net Ton	
Cast iron borings.....	9.50 to 10.00
Machine shop turnings.....	9.00 to 9.50
No. 1 machinery cast.....	17.50 to 18.00
No. 1 railroad cast.....	15.50 to 16.00
Iron axles.....	22.50 to 23.00
No. 1 railroad wrought.....	12.00 to 12.50
Pipes and flues.....	8.00 to 9.00
No. 1 busheling.....	10.50 to 11.00
Mixed bushelings.....	9.50 to 10.00
Burnt cast.....	10.50 to 11.00
Stove plate.....	11.00 to 11.50
Brake shoes.....	12.00 to 12.50

St. Louis

Sale of 2000 Tons of Tennessee Pig Iron Made at \$18.50 Birmingham

ST. LOUIS, March 24.—The sale of 2000 tons of Southern iron by a Rockwood, Tenn., maker at \$18.50, Birmingham, caused quite a stir in the St. Louis market and a decidedly weaker tendency. This puts Southern iron in St. Louis at \$23.67 a ton. The other leading Southern makers are still nominally quoting \$22, Birmingham, and there has been no announced change by Chicago or Granite City makers, although it is believed that prices quoted are being shaded. A Chicago maker sold 1000 tons of basic to an Iowa melter. The only sale of consequence by the St. Louis Coke & Iron Co. was 500 tons to a Belleville stove foundry.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Florence and Sheffield (rail and water), \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25...	\$26.14
Northern malleable, sil. 1.75 to 2.25	26.16
Basic.....	26.16
Southern fdy., sil. 1.75 to 2.25 (rail)	\$23.67 to 27.17
Southern fdy., sil. 1.75 to 2.25 (rail and water)	25.28
Granite City iron, sil. 1.75 to 2.25	25.81 to 26.31

Finished Iron and Steel.—It is expected that within the next 10 days the warehouses in this district will be doing considerable business from the Missouri and southern Illinois district stricken by the cyclone. Only a fair amount of business is being done by warehouses now and that is in bars. The Missouri Highway Commission awarded road contracts which will require about 1000 tons of reinforcing bars—about half of which it is understood will go to the Kansas City Bolt & Nut Co.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, cold rolled, one pass, 4.80c.; galvanized steel sheets, No. 28, 5.80c.; black corrugated sheets, 4.95c.; galvanized, 5.95c.; cold-rolled rounds, shafting and screw stock, 3.95c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{1}{2}$ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 60 per cent; lag screws, 60 per cent; hot pressed nuts, squares, \$3.50; hexagons, blank or tapped, \$4 off list.

Coke.—The movement of foundry coke continues fairly large but practically all of it is being sold by the by-product producers in this district. Contracts for coke for water gas concerns expire April 1, and these are beginning to be renewed. There is no business in domestic grades.

Old Material.—The outstanding feature of the old material market this week was the purchase by the American Steel Foundries of about 5000 tons. Bolsters and cast steel were sold at 50c. a ton less than this concern's previous purchase on March 4, while springs, knuckles, couplers and wheels were unchanged. Other consumers are covered on their requirements for the next 30 days, and are showing no interest in requirements beyond that. New lists include the following: St. Louis & San Francisco 1800 tons, Chicago, Burlington & Quincy 2000 tons of 60-lb. relaying rails and 7500 tons of miscellaneous scrap, and St. Louis Southwestern 900 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails.....	\$17.50 to \$18.00
Rails for rolling.....	19.00 to 19.50
Steel rails less than 3 ft.....	20.00 to 20.50
Relaying rails, 60 lb. and under.....	25.00 to 26.00
Relaying rails, 70 lb. and over.....	32.50 to 33.50
Cast iron car wheels.....	17.50 to 18.50
Heavy melting steel.....	16.00 to 16.50
Heavy shoveling steel.....	16.00 to 16.50
Frogs, switches and guards cut apart.....	17.50 to 18.00
Railroad springs.....	19.50 to 20.00
Heavy axles and tire turnings.....	13.00 to 13.50
No. 1 locomotive tires.....	19.00 to 19.50

Per Net Ton	
Steel angle bars.....	15.50 to 16.00
Steel car axles.....	19.50 to 20.00
Iron car axles.....	25.50 to 26.00
Wrought iron bars and transoms.....	19.50 to 20.50
No. 1 railroad wrought.....	14.50 to 15.00
No. 2 railroad wrought.....	14.25 to 14.75
Cast iron borings.....	12.50 to 13.00
No. 1 busheling.....	13.00 to 13.50
No. 1 railroad cast.....	18.00 to 18.50
No. 1 machinery cast.....	19.00 to 19.50
Railroad malleable.....	16.00 to 16.50
Machine shop turnings.....	8.50 to 9.00
Champion bundled sheets.....	9.50 to 10.00

Buffalo

Pig Iron Prices Show Easing Tendency but Shipments Have Improved

BUFFALO, March 24.—The total pig iron inquiry for the week was about 10,000 tons, the principal new business offering being the 2000 tons of basic for the Gould Coupler Co. This is in addition to the 2000 tons of malleable for the Gould company, mentioned last week in this column. A southern Pennsylvania melter sought 800 tons and the remainder is scattering. While the inquiry is better than last week, buying is being very cautiously done. The majority of the orders run into second quarter, but start right away, indicating that stocks are being run down. Furnace operation is unchanged. The Wickwire-Spencer Steel Corporation furnaces will blow in April 1 if condition of the market warrants. Prices are on the same levels as last week with an easing tendency. Shipments are improved.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25.....	\$21.50 to \$22.00
No. 2X foundry, sil. 2.25 to 2.75..	22.00 to 23.00
No. 1 foundry, sil. 2.75 to 3.25....	23.00 to 24.00
Malleable, sil. up to 2.25.....	21.50 to 22.50
Basic.....	22.00
Lake Superior charcoal.....	29.28

Finished Iron and Steel.—Wire business, mills report, is holding up well and capacity operation is being had. The varieties most sought after are the spring and high carbon ranges. Makers see three months of solid operation ahead. Demand is fair for sheets with the automobile business taking its customary quota. Prices are holding to 3.50c. for black and 4.60c. for full pickled, freight allowed in both instances. The contract for 1000 tons of reinforcing bars for the new Washburn-Crosby elevator here, has been let to a Chicago concern and orders for 100 tons for a Rochester school and 250 tons for a Buffalo school have been placed. On carbon steel bars and shapes, price is 2.365c. delivered Buffalo.

Warehouse prices are being quoted as follows: Steel bars, 3.30c.; steel shapes, 3.40c.; steel plates, 3.50c.; No. 10 blue annealed sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.85c.; cold rolled shapes, 4.70c.; cold rolled rounds, 4.20c.; wire nails, 4.00c.; black wire, 4.05c.

Old Material.—Lightening of the demand for steel with consequent reflection on mill rolling programs is

having its effect on this market, and scrap is weak. Dealers who are closely observing present conditions look for a long pull before their business again becomes brisk. Two of the mills continue to buy material, but only in small quantities, partly because their stocks are sufficient for their present needs, and partly because too many old orders are out for the mills to be able to buy much in the open market. A good many old orders which could not be completed at the time set have been cancelled by dealers. One mill is offering \$17 for heavy melting steel and \$15.75 for hydraulic compressed sheets. Another mill is offering \$16 for heavy melting steel. Nothing is moving in specialties beyond an occasional sale. Another weakening element to the local scrap market is the fact that electrification work in one local mill will mean a reduction of open-hearth operation and a consequent lessening of demand.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	\$16.75 to \$17.00
Low phosphorus	19.00 to 20.00
No. 1 railroad wrought	15.00 to 15.50
Car wheels	18.50 to 19.50
Machine shop turnings	11.50 to 12.00
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.50 to 16.00
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Bundled sheets	12.00 to 12.50
Hydraulic compressed	15.50 to 16.00
Railroad malleable	18.00 to 18.50
No. 1 cast scrap	17.00 to 17.50
Iron axles	27.00 to 28.00
Steel axles	17.50 to 18.00

Cleveland

Fair Demand for Finished Materials—Pig Iron Market Weak

CLEVELAND, March 24.—The demand for steel is holding up to about the recent volume. Mills are getting a good number of orders on contracts and about all the tonnage covered by first quarter contracts has been specified. March shipments to this district by some of the mills will fall but little below those in February. Some buyers are sending in specifications on steel bar business for April shipment and some new inquiries are coming out for second quarter contracts.

Automobile companies, now that their production has increased, are ordering more freely but rather cautiously. Good tonnages in steel bars are coming from this source for early shipment.

The Biggs Construction Co., a subsidiary of the Biggs Boiler Co., Akron, was low bidder for the riveted pipe line in Kansas City requiring 5000 tons of plates. The Standard Oil Co. of Ohio is inquiring for 10 stills and this with the pending inquiry of the Standard Oil Co. of Indiana makes 67 stills out for figures requiring 2500 tons of steel. The Lake boats are still pending.

The New York Central Railroad has issued an inquiry for steel for its second quarter requirements for which bids will be received March 31. The inquiry includes 3000 tons of steel bars, plates and structural material, 300 tons of sheets, 300 tons of forging billets and 4000 axles.

There has been little change in the price situation. Steel bars and structural material are firm at 2.10c., Pittsburgh, and that price also appears to be maintained on plates in this district. While there have been reports of a 2c. price, these have not been substantiated. The hot-rolled strip market lacks strength. On hoops and bands up to 6 in. wide, 2.40c. has become the more common price, but on wider material a 2.25c. base is being named.

Pig Iron.—The market is extremely dull and Lake furnace prices are untested. However, the trend of the market the past week has been toward slightly lower levels to bring prices more in line with a \$21 price on foundry iron in the Valley district. This is more particularly true of inquiries from consuming

points for which Valley furnaces come into competition. On small lot sales, Valley producers are still able to get \$21.50 for foundry iron. Cleveland furnaces continue to hold to \$23 at furnace for local delivery at which car lot sales are reported, but for round lot business this price is only nominal, as a good inquiry would doubtless bring out a quotation low enough to meet Valley competition in this city. One Lake furnace is now holding to \$22 for foundry and malleable grades and that is the established price in Michigan. With the recent reductions, pig iron prices are down to where they were before the advance in coke around the first of the year. One Cleveland producer sold 2000 tons during the week and has inquiries for 1400 tons, including a 2000-ton lot for New England. A St. Louis consumer is reported in the market for 1500 tons of basic iron. A great deal of first quarter iron will be carried over to the second quarter, this being more noticeable in the automotive industry which is now taking iron more freely. While foundries in this district are fairly busy, they are not filled up for very far ahead. The McKinney Steel Co. blew in a River furnace which had been out for relining and is now operating three out of four of these furnaces.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

Basic, Valley furnace	\$21.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	\$23.00 to 23.50
Southern fdy., sil. 1.75 to 2.25	26.01 to 27.01
Malleable	23.00 to 23.50
Ohio silvery, 8 per cent	32.52 to 33.52
Standard low phos., Valley furnace	28.50

Iron Ore.—Following the abandonment of all efforts to get higher prices for ore this season as announced last week, the more general feeling is that the market will be established at last year's prices rather than at somewhat lower prices. However, the question of prices is very much unsettled, although some of the ore people seem to be rather confident that last year's prices will be re-established. There is a difference of sentiment among consumers, some wanting lower prices and others favoring the maintenance of the 1924 schedules. The Ford Motor Co. has extended until March 25 the time for receiving quotations on its inquiry for 160,000 tons of ore, but most of the quotations are already in. The Ford company is endeavoring to avoid, if possible, the establishment of the season's prices on the basis of the Ford purchases. If its efforts are successful, the prices at which this company is able to buy ore will probably not be made public.

Iron Ore Consumption.—Consumption of Lake Superior ore during February amounted to 4,999,696 tons as compared with 5,241,992 tons in January, the decrease of 242,296 tons being due to the shorter month. The amount consumed in February, 1924, was 4,782,639 tons. Ore on hand at furnaces March 1 was 20,184,429 tons and the amount at furnaces and Lake Erie docks was 26,207,081 tons as compared with 29,257,956 tons on March 1, 1924. These figures indicate the correctness of the estimate made in December that the amount at furnaces and on docks May 1 will be 4,000,000 tons less than the normal average on that date of approximately 20,000,000 tons. On Feb. 29 there were 225 furnaces in blast using Lake ore, a gain of 5 over Jan. 3. Interior furnaces in the central district consumed 2,756,240 tons of ore in February, a decrease of 170,112 tons as compared with January. Lake front furnaces consumed 2,015,025 tons, a decrease of 71,057 tons. Eastern furnaces consumed 120,494 tons, a decrease of 21,015 tons and all rail furnaces consumed 107,937 tons, an increase of 988 tons.

Fluorspar.—Efforts to maintain a \$21 price on 85 and 5 per cent fluorspar have proved unsuccessful, the market having settled down to \$19 except for small lots, for which \$20 is quoted. Some second quarter business has been taken on the \$19 basis.

Bolts, Nuts and Rivets.—The increased activity in the automobile industry has resulted in a better demand from automobile companies for bolts and nuts on first quarter contracts. Manufacturers are booking some second quarter business, partly from the auto-

motive industry. Local makers are holding to the regular quotations for car lots with a 5 per cent lower discount for smaller lots. The leading local rivet manufacturer has adopted its first quarter price of 2.60c., Cleveland and Pittsburgh for second quarter on large rivets and has advanced small rivets to 70 and 10 per cent off list as compared with 70, 10 and 5 for the current quarter. However, small rivets are weak and some concessions are appearing on good lots of large rivets.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c.; hoops and bands, 3.85c.; No. 9 annealed wire, \$3.25 per 100 lb.; No. 9 galvanized wire, \$3.70 per 100 lb.; common wire nails, \$3.35 base per 100 lb.

Semi-Finished Steel.—An Ohio mill has purchased 1000 tons of sheet bars at \$37, Youngstown, but this price has not become an open quotation and some of the mills are still asking \$39 at which they have been unable to make sales. A Cleveland mill has sold 10,000 tons of sheet bars for the second quarter subject to trade paper prices. The same seller reports that it has refused an offer of \$37.50, Cleveland, for 50,000 tons. Considerable business is backing up awaiting the definite establishment of second quarter prices. With the present weakness of the sheet market, consumers do not regard even a \$37 price attractive. Consumers feel confident of securing a \$35 price on slabs. The falling off in demand has resulted in some curtailment in the production of semi-finished steel.

Sheets.—Buying by the Detroit automobile industry has subsided after most of the leading car companies placed large tonnages for the second quarter, but there is a fair amount of activity in this district. It has developed that some of the contracts from the automotive industry are for lots up to a specified tonnage, so that the contracts are not much more than options. Automobile companies appear to regard the prices they obtained as attractive and some are believed to have purchased in excess of their expected requirements, so that in case of a price advance they will be covered at the end of the quarter with some low priced sheets to carry over into the third quarter. The market continues weak. While black sheets have sold as low as 3.25c., this is an extreme price and in this territory considerable business is being taken at 3.50c. Blue annealed sheets show less strength than recently. On these 2.60c. is commonly quoted. Galvanized sheets are weak at 4.60c. and auto body sheets are plentiful at 4.40c.

Reinforcing Bars.—The Truscon Steel Co. has taken 1500 tons of reinforcing bars for a building for the B. F. Goodrich Co., Akron, and 500 tons for foundations for the blast furnace of the Central Furnace Co., Massillon. The market on rail steel bars is unchanged at 1.90c. to 2c.

Coke.—The foundry coke market is weak, following the reduction of wages in the Connellsville district, but the range of price is unchanged at \$4.25 to \$5.50. Ohio by-product foundry coke is quoted at \$6.50 Painesville.

Old Material.—Lacking the support of any demand, the market has become weaker since the purchase of a round lot of machine shop turnings by a Cleveland consumer reported last week. Dealers are paying \$14.25 to \$14.50 delivered for this grade, a decline of 25c. to 50c. a ton. Borings also show a weakness. Heavy melting steel is down to \$18.75 to \$19, Valley.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	\$16.50 to \$16.75
Rails for rolling	17.00 to 17.25
Rails under 3 ft.	19.00 to 19.50
Low phosphorus melting	19.00 to 19.50
Cast iron borings	13.75 to 14.00
Machine shop turnings	13.75 to 14.00
Mixed borings and short turnings	13.75 to 14.00
Compressed sheet steel	14.50 to 14.75
Railroad wrought	13.00 to 13.25
Railroad malleable	19.50 to 20.00
Light bundled sheet stampings	12.25 to 12.50
Steel axle turnings	14.75 to 15.00
No. 1 cast	18.75 to 19.25
No. 1 busheling	13.75 to 14.00
Drop forge flashings	12.50 to 12.75
Railroad grate bars	14.50 to 14.75
Stove plate	14.50 to 14.75
Pipes and flues	10.50 to 11.00

Philadelphia

Steel Business on the Decline as to Both Volume and Prices

PHILADELPHIA, March 24.—Steel buying is on the decline, both as to new orders and specifications on contracts and the rate of operations at some of the Eastern plants has been reduced, one plant, for example, having put out five out of the 12 open-hearth furnaces that were operating last week. As is usual when a decline occurs in the volume of buying, the Eastern mills are feeling the slump to a greater degree than those of other districts, but all mills selling in this territory are suffering from the buying lull. Many consumers are not taking out their contract tonnages in full, it being apparent that in the enthusiasm of December and January they provided for more steel than their first quarter manufacturing has required. The fact that some current prices are back to the first quarter contract prices, and in one or two instances have gone below those prices, is deterring consumers from specifying steel which they do not now need and which, they feel, may be cheaper when they actually do need it. The worst price slump has occurred in structural shapes, which have been sold even in small lots at less than 2.32c., Philadelphia. Last week sales at a price equivalent to 1.95c., Pittsburgh, were reported and it is certain that since that time even that figure has been shaded. Plates are holding at 2.32c., Philadelphia, equivalent to 2c., Pittsburgh, but the market has not been severely tested in the past week.

In pig iron and scrap there are no significant changes, foundry iron remaining at \$23, base, Eastern furnace. A purchase of more than 20,000 tons of No. 1 heavy melting steel did not drive the price below \$16, at which it has remained for the past few weeks.

Pig Iron.—Developments in the pig iron market are few and unimportant. Although there has been a slightly improved inquiry in the past week, the total tonnage is not large and the market as a whole presents no marks of encouragement to sellers, except possibly the fact that prices on domestic iron have not gone below \$23, base, for foundry grades. Differentials are back to 50c., however, and No. 1 X iron now is only \$1 higher than No. 2 plain, whereas early in the year the spread was frequently \$1.50 to \$2. The only weak spot in prices was on foreign iron, a few carloads having been sold at \$22.50, f.o.b. cars Philadelphia, to avoid payment of demurrage. The Alan Wood, Iron & Steel Co. has blown out its No. 2 furnace at Swedeland for relining. The Delaware River furnace at Chester, which is ready to go in blast, may not be lighted until the pig iron situation improves. A radiator company is inquiring for 1000 tons of foundry iron.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25	
sil.	\$23.76 to \$24.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	24.26 to 25.13
East. Pa. No. 1X	24.76 to 25.63
Virginia No. 2 plain, 1.75 to 2.25	
sil.	29.17 to 29.67
Virginia No. 2X, 2.25 to 2.75 sil.	29.67 to 30.17
Basic delivered eastern Pa.	23.75 to 24.25
Gray Forge	23.50 to 24.50
Malleable	24.50 to 25.00
Standard low phos. (f.o.b. furnace)	25.00 to 26.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00

Various grades of foreign pig iron are being offered at approximately the prices quoted below, all quotations being f.o.b. cars, Philadelphia:

Indian foundry iron, 2 to 2.50 per cent sil.	\$23.50 to \$24.00
Indian foundry iron, 2.25 to 3 per cent sil.	24.00 to 24.50
English foundry iron, 2 to 2.50 per cent sil.	23.00 to 23.50
Continental foundry, 2.50 to 3 per cent, sil.	23.00 to 23.50
English low phos., copper free...	26.00

Ferroalloys.—The ferromanganese market is quiet, the price remaining at \$115, furnace or seaboard, for domestic or imported alloy.

Billets.—There is little demand for billets. Prices quoted by Eastern mills are \$37.50, Pittsburgh, for re-rolling quality and \$42.50 for forging quality.

Plates.—The demand for plates is not in keeping with the rate at which Eastern mills have recently been operating and at one or two places there has been a sharp reduction in output. One company which last week had on 12 open-hearth furnaces has put out five and may let another go out next week. Ordinary sized lots are now being quoted at 2c., Pittsburgh, the 2.10c. price having almost disappeared on anything above a carload.

Structural Shapes.—Keener competition for business has resulted in further weakness in prices of shapes. Last week sales at 1.95c., Pittsburgh, were reported, and it is now certain that this price has been shaded. Carload lots have been offered at the equivalent of 1.975c., Pittsburgh. Letting of the contract for the third section of the Broad Street subway, Philadelphia, has been held up by a taxpayers' suit, the low bidder having failed to meet certain of the requirements of the bidding. The Keystone State Construction Co., the second lowest bidder, may get the work, in which event the steel, amounting to 14,000 tons, will probably be fabricated by the McClintic-Marshall Co.

Sheets.—The sheet market has become almost demoralized as to prices. Some of the low prices reported in the Central West do not seem to be common in the East and it is difficult to ascertain just how low quotations are for shipment to this section. Galvanized sheets are quoted from 4.60c. to 4.75c., black at 3.40c. to 3.50c. and blue annealed at 2.65c. to 2.70c., Pittsburgh.

Warehouse Business.—Prices are as quoted last week, for local delivery.

Old Material.—An eastern steel company last week bought upward of 20,000 tons of heavy melting steel at \$16, delivered. This does not change the quoted range of \$16 to \$16.50 on this grade as some of the scrap companies are still willing to pay \$16.50 for material to be stored. There have been very few transactions in other grades of scrap and prices are nominal and unchanged.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$16.00 to \$16.50
Scrap rails	16.00 to 16.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	20.00 to 21.00
Rolled steel wheels	20.00 to 21.00
Cast-iron car wheels	18.50 to 19.00
No. 1 railroad wrought	19.00 to 19.50
No. 1 yard wrought	17.50 to 18.50
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	13.50
Mixed borings and turnings (for blast furnace use)	12.50 to 13.00
Machine shop turnings (for steel works use)	13.50
Machine shop turnings (for rolling mill use)	14.00
Heavy axle turnings (or equivalent)	14.50 to 15.50
Cast borings (for steel works and rolling mill)	14.00 to 14.50
Cast borings (for chemical plants)	18.50 to 19.00
No. 1 cast	18.00 to 19.00
Heavy breakable cast (for steel plants)	16.00 to 16.50
Railroad grate bars	14.00
Stove plate (for steel plant use)	14.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.00 to 16.50
Shafting	22.00 to 23.00
Steel axles	22.00 to 23.00

Imports.—Pig iron imports last week were fairly heavy, 3842 tons coming in from England, 2413 tons from British India, 250 tons from the Netherlands and 837 tons from Belgium. Steel also continues to come in from abroad, 605 tons of blooms being imported from France, 261 tons of bars from Belgium and 328 tons of structural steel from Belgium. Ferromanganese from Germany amounted to 200 tons and there was 50 tons from England.

JAPANESE MARKET WEAK

Return to Former Tin Plate Duty Hits Speculators —American Steel Importers Active

NEW YORK, March 24.—Much of the demand from foreign markets for iron and steel products is apparently being satisfied with European rather than American steel. However, in most markets, current needs are small, so that an increase in consumption may bring further business to the United States. This is particularly true of China, from which only small lot inquiries are coming and price ideas on second hand material and wire shorts are still below the American sellers' quotations. The Japanese market seems to have been temporarily affected by some slight speculating engaged in last fall in the belief that with the regular tariff in effect on tin plate and sheets, after March 10, higher prices would prevail in the domestic market. Action of the Diet in reducing the tin plate duty to the old conventional tariff rate of 70 sen per 100 kin has resulted in active offering of tin plate by holders of stocks who bought at \$6.15 to as high as \$6.30 per base box, c.i.f. Japan, and are now competing with British and American prices of \$5.90 per base box, c.i.f. Certain American sellers, well booked with domestic business, are not inclined to go below \$6 per base box on tin plate for Japan.

The black sheet market, although still protected by the regular tariff of 15 per cent ad valorem on black and 18 per cent on galvanized, continues weak, possibly as a result of the low British quotations. A recent advance of British sellers, however, brings their price on light gage sheets to \$89 per ton, c.i.f. Japan, compared with an American quotation of \$91 to \$92 per ton.

Railroad inquiry still occupies the most prominent position in Japanese business. In addition to the expected inquiry of the South Manchuria Railway Co. for 40 to 100 miles of 100-lb. rails, inquiries are reported to be in preparation from the Osaka Electric Railway for 10 miles of 91-lb. high T rails and from Nagoya municipality for 4 miles of 91-lb. high T rails. In addition to the business from railroads, there has been some interest in electrical sheets and an inquiry for 100 tons of structural steel recently appeared.

Steel and Iron Importations

Importers continue active in seeking business with American consumers in the East, principally in structural material and reinforcing bars. A New York contractor with large sewer construction work in hand has closed on about 500 tons of reinforcing bars with a prominent independent steel company in the United States and claims to have obtained prices on foreign material for the remaining 6000 tons of bars needed, low enough to justify award of the business to a European mill. The order which will provide for deliveries of about 1000 tons a month for six months, is expected to be placed in a few days.

Pig iron importers claim to be encountering some difficulty in competing with Buffalo furnaces in the New England district. Except on the larger tonnages of pig iron, which might develop a quotation on foreign pig iron of \$23.75 per ton, c.i.f. Atlantic port, duty paid, the usual quotation on smaller lots is \$24 per ton, c.i.f. duty paid, permitting competition with the domestic product only in a limited area close to the port.

Investigation by the anti-dumping section of the Customs Bureau of foreign pig iron imports has thus far been confined to Canadian and Indian pig iron. There is apparently no ground for action against Canadian sellers, who have competed with American furnaces in the North. Information has just been received from India on market conditions there. This information will be turned over to the appraisers at Boston, New York, Philadelphia, Baltimore, New Orleans and Galveston, and should they conclude that dumping has occurred in any case where they still hold the invoice, action will be requested against the importer. If the information on Indian market conditions proves insufficient, investigation may be made as to the selling price of Indian producers in other iron consuming countries.

TO PROMOTE ECONOMIES

Large Meeting at Los Angeles Addressed by Lee H. Miller of American Institute of Steel Construction

LOS ANGELES, March 20.—Lee H. Miller chief engineer of the American Institute of Steel Construction, explained the work that the institute is doing for the standardization of building codes and for the elimination of wasteful practices in the fabrication and erection of structural steel to an audience of nearly 400, composed of fabricators, mill representatives, architects, contractors, engineers, financiers and others interested in construction economies, at the inaugural banquet, last night, of the Southern California Division of the Institute, at the Alexandria Hotel. Maynard McFie, president W. T. McFie Supply Co., chairman of the executive committee of the California Steel Industries, and past president of the Los Angeles Chamber of Commerce, presided as toastmaster. The only other speaker was Fred L. Baker, president Baker Iron Works, one of the Los Angeles pioneer structural steel fabricators.

Mr. Miller complimented the local fabricators for the prompt and effective manner in which they have launched the campaign for more efficient use of structural steel. He stated that the cooperation of structural steel fabricators throughout the country, working through the institute, has made possible a saving of about \$30,000,000 annually in the fabrication and erection of structural steel. Los Angeles, Mr. Miller stated, is one of more than 25 cities that have taken advantage of the economies made possible through the standard specifications developed by the institute. After discussing the work and plans of the institute at length Mr. Miller discussed the technical advantages of the standard specifications from the viewpoint of an engineer.

Maynard McFie in introducing Mr. Miller directed attention to the increased use of steel and steel products in southern California. He stated that 50 out of every 100 tons of steel shipped through the Panama Canal for Pacific Coast consumption is unloaded and distributed in Los Angeles.

Fred L. Baker told reminiscences of the growth of the Los Angeles iron works and fabricating plants during the past half century. A telegram from Herbert Hoover was read by Mr. McFie, in which the Secretary of Commerce congratulated the fabricators of southern California for their voluntary cooperation in furthering the work that has already been accomplished by the institute in simplification.

Among those at the speakers' table were: Lee H. Miller, chief engineer American Institute of Steel Construction; Maynard McFie, W. T. McFie Supply Co., toastmaster; J. J. Backus, city building inspector; J. H. Bean, Los Angeles County supervisor; J. Dabney Day, president Citizens' National Bank; E. P. Clark, hotel operator and financier; Henry M. Jones, Megquier Jones Co., Portland, Me.; D. P. M. Little, Los Angeles; Horace G. Miller, Union Iron Works; Leigh Morris, Bethlehem Steel Co.; Reese Llewellyn, Llewellyn Iron Works; Fred L. Baker, Baker Iron Works.

The dinner was arranged by Walton T. Farrar, secretary of the southern California division of the institute, and was given under the auspices of the following committee: Benjamin Harwood, Llewellyn Iron Works, chairman; Guy C. Boynton, Baker Iron Works; Ed. Friedman, Friedman & Son; A. L. Lowith, Lowith Iron Works; William Koch, Modern Iron Works; C. E. Bradburn, Pacific Iron & Steel Co.; Fred Brombacher, Brombacher Iron Works; William Lacy, Lacy Mfg. Co.; M. H. Hanauer, Minneapolis Steel & Machinery Co.; H. E. Robertson, Virginia Bridge & Iron Co.; B. J. Osborne, Moore Shipbuilding & Drydock Co.; W. B. Kyle, McClintic-Marshall Co.

SEATTLE BUYING SLOW

Prices Unsteady—Plates in Demand for Water Pipe Lines

SEATTLE, March 20.—There has been a decided slowing down in the local steel trade this month as compared with the activity in January, and which continued until about the middle of February. Managers of sales of some of the Eastern steel mills say their trade in March will be much less than last month, while several local jobbing houses also report a falling off in sales. The nominal advances in prices made by the mills in December and January were ill advised, and did not at any time become factors in the market, but they slightly stimulated specifications against contracts.

There is not a single item in the list of steel products that cannot be bought today at as low prices as at any time in the last six months. Neither jobbers nor consumers are in the mood to anticipate needs, buying only in small lots to meet current requirements, and are likely to continue this policy. This determination has been made stronger by the fact that for three or four months, the steel mills have been operating at a higher rate of capacity than actual orders and business on the books warranted. Then, too, deliveries by the mills have been very prompt, obviating the necessity of jobbers carrying any larger stocks than are necessary to meet the current demands.

General business conditions in Seattle and nearby places is only fairly good, with the single exception of the building trade, and this is very active, promising to be larger this year than in 1924, the latter having been the biggest year ever known in the local building trade. In the first three months of this year, local building permits were issued to the value of more than \$6,500,000, and as soon as the winter is over building permit values will no doubt show still larger increase.

Some large inquiries are in the market on plates, and if these develop into actual business, some low figures are likely to come out. At present, plates of tank quality are held at about 2.50c, but 2.45c has been done

lately in several cases. The city of Vancouver, B. C., is in the market for four miles of 26-in. and 32-in. and 10 miles of 36-in. steel pipe for a new water line, to be made from plates 5/16-in. to 1/2-in. in thickness. Bids on this job are to be opened by the Civic Water Works at Vancouver on April 14. Tacoma is also in the market for 640 tons of 60-in. and 66-in. water pipe to be made from flanged copper content steel plates, bids to be opened early in April. There are other numerous smaller jobs of plate work that will soon come up, as Seattle, Portland, Tacoma and other coast cities are replacing with steel old water lines laid many years ago with wooden pipe.

The market on sheets is quiet, and prices have gone squarely back to what they were before the Eastern mills made the several advances in prices early this year and late in 1924. Eastern mills that made these advances and instructed their local sales managers to quote them on inquiries, have lately advised that they will accept orders on the basis of 2.60c Pittsburgh for blue annealed, 3.50c for black and 4.60c for galvanized. Sales of sheets in this district are fully 60 to 70 per cent of galvanized.

Only a very limited tonnage in structural steel work is coming out, this being made up of small jobs ranging from 100 to 300 tons. Three highway bridges in King and Pierce counties calling for close to 1000 tons are being figured on, and, it is expected, will soon be ready for bids. The Atchison, Topeka & Santa Fe is in the market for about 200 tons for cantilever masts and signal bridges. Plain steel material is quoted here at 2.50c. equal to about 1.80c Pittsburgh mill.

Wire products are quiet, and prices on wire nails in the local market are somewhat demoralized, due to the action of a leading maker in deciding to meet competition in the local market, and in fact has gone below it. Wire nails are being quoted here at prices that mean close to \$2.50 base, per keg, at Pittsburgh mill. Low prices are being made on plain and galvanized wire.

The market on nuts and bolts is also lower, and discounts being named by Eastern makers are not being observed in this market; on the contrary, considerably lower prices are being made by local makers.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....2c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.30c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.10c.
F.o.b. Chicago, base, per lb.....2.30c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2.10c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.20c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb.....2.10c.
Rail steel bars, f.o.b. Chicago district mills, base, per lb.2.10c.
Common iron bars, f.o.b. Chicago, base, per lb.....2.10c.
Refined iron bars, f.o.b. P'gh mills, base, per lb..3c. to 3.10c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base, per lb., Pittsburgh.....2.40c.
Bands, base, per lb., Pittsburgh.....2.40c.
Strips, Pittsburgh.....2.40c.
Strips, Chicago.....2.55c. to 2.60c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb.
2.70c. to 2.80c.
Screw stock and shafting, f.o.b. Chicago, base, per lb.....2.80c.
Screw stock, base, per lb., Cleveland.....2.75c. to 2.85c.
Shafting, ground, f.o.b. mill, base, per lb.....3.20c.
Strips, f.o.b. P'gh mills, base, per lb.....4c. to 4.15c.
Strips, f.o.b. Cleveland mills, base, per lb.....4c. to 4.15c.
Strips, f.o.b. Chicago mills, base, per lb.....4.30c. to 4.45c.
Strips, f.o.b. Worcester mills, base, per lb.....4.30c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....\$2.85 to \$2.95
Galvanized nails, 1-in. and longer, base plus.... 2.25
Galvanized nails, shorter than 1-in., base plus.... 2.50
Bright plain wire, base, No. 9 gage, per 100 lb.. 2.60 to 2.70
Annealed fence wire, base, per 100 lb.....2.75 to 2.85
Spring wire, base, per 100 lb.....3.60 to 3.70
Galvanized wire, No. 9, base, per 100 lb.....3.20 to 3.30
Galvanized barbed, base, per 100 lb.....3.55 to 3.65
Galvanized staples, base, per keg.....3.55 to 3.65
Painted barbed wire, base, per 100 lb.....3.30 to 3.40
Polished staples, base, per keg.....3.30 to 3.40
Cement coated nails, base, per count keg.....2.15 to 2.25
*Bale ties, carloads to jobbers...75, 15 and 5 per cent off list
*Bale ties, carloads to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.
\$67.00 to \$69.00

Chicago district mill prices are \$2 per ton above the foregoing and Chicago delivered prices are \$3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mills \$3 a ton higher on production of that plant, and Duluth, Minn., mills \$2 a ton higher; Anderson, Ind., \$1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh dist. mill.....2.70c.
No. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills..2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.3.40c. to 3.50c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.70c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.....4.60c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....4.85c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.3.40c. to 3.50c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.70c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.40c. to 4.50c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

Tine Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills.....\$5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind.....5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb	20-lb. coating I. C....\$15.50
base.....\$11.20	25-lb. coating I. C.... 17.00
8-lb. coating I. C.... 11.50	30-lb. coating I. C.... 18.35
15-lb. coating I. C.... 14.35	40-lb. coating I. C.... 20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb..\$2.60
Large, f.o.b. Chicago, base, per 100 lb.....2.75
Small, f.o.b. Pittsburgh.....70, 10, 5 per cent off list
Small, Cleveland.....70 and 10 to 70, 10 and 10 per cent off list
Small, Chicago.....70 to 70 and 10 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....\$43.00
Rails, light, billet, base, per lb.....1.80c. to 1.90c.
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.
Spikes, $\frac{1}{2}$ in. and larger, base, per 100 lb.....\$2.80 to \$3.20
Spikes, $\frac{3}{4}$ in. and smaller, base, per 100 lb.....3.10 to 3.50
Spikes, boat and barge, base, per 100 lb.....3.25
Track bolts, all sizes, base, per 100 lb.....3.90 to 4.25
Tie plates, per 100 lb.....2.35 to 2.50
Angle bars, base, per 100 lb.....2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
$\frac{1}{4}$	45	19 $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{3}{8}$	+11	+39
$\frac{1}{2}$ to $\frac{3}{8}$	51	25 $\frac{1}{2}$	$\frac{1}{2}$	22	2
$\frac{3}{4}$	56	42 $\frac{1}{2}$	$\frac{3}{4}$	28	11
1.....	60	48 $\frac{1}{2}$	1 to 1 $\frac{1}{2}$	30	13
1 to 3.....	62	50 $\frac{1}{2}$			
Lap Weld					
2.....	55	43 $\frac{1}{2}$	2.....	23	7
2 $\frac{1}{2}$ to 6.....	59	47 $\frac{1}{2}$	2 $\frac{1}{2}$	26	11
7 and 8.....	56	43 $\frac{1}{2}$	3 to 6.....	28	13
9 and 10.....	54	41 $\frac{1}{2}$	7 to 12.....	26	11
11 and 12.....	53	40 $\frac{1}{2}$			

Butt Weld, extra strong, plain ends					
$\frac{1}{4}$	41	24 $\frac{1}{2}$	2 to 3.....	61	50 $\frac{1}{2}$
$\frac{1}{2}$ to $\frac{3}{8}$	47	30 $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{3}{8}$	+11	+54
$\frac{3}{4}$	53	42 $\frac{1}{2}$	$\frac{1}{2}$	21	7
1.....	58	47 $\frac{1}{2}$	$\frac{3}{4}$	28	12
1 to 1 $\frac{1}{2}$	60	49 $\frac{1}{2}$	1 to 1 $\frac{1}{2}$	30	14

Lap Weld, extra strong, plain ends					
2.....	53	42 $\frac{1}{2}$	2.....	23	9
2 $\frac{1}{2}$ to 4.....	57	46 $\frac{1}{2}$	2 $\frac{1}{2}$ to 4.....	29	15
4 $\frac{1}{2}$ to 6.....	56	45 $\frac{1}{2}$	4 $\frac{1}{2}$ to 6.....	28	14
7 to 8.....	52	39 $\frac{1}{2}$	7 to 8.....	21	7
9 and 10.....	45	32 $\frac{1}{2}$	9 to 12.....	16	2
11 and 12.....	44	31 $\frac{1}{2}$			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 $\frac{1}{2}$ points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2 $\frac{1}{2}$ per cent beyond the above discount.

Notes—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2 $\frac{1}{2}$ in.....	27	1 $\frac{1}{2}$ in.	+18
2 $\frac{1}{2}$ to 3 in.....	37	1 $\frac{1}{2}$ to 1 $\frac{1}{2}$ in.....	+ 8
3 in.....	40	2 to 2 $\frac{1}{2}$ in.....	— 2
3 $\frac{1}{2}$ to 3 $\frac{1}{2}$ in.....	42 $\frac{1}{2}$	2 $\frac{1}{2}$ to 3 in.....	— 7
4 to 13 in.....	46	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$ in.....	— 9

Beyond the above discount, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	60	3 in.	45
1 $\frac{1}{4}$ and 1 $\frac{1}{2}$ in.....	52	3 $\frac{1}{4}$ to 3 $\frac{1}{2}$ in.....	47
1 $\frac{3}{4}$ in.	36	4 in.	50
2 and 2 $\frac{1}{4}$ in.....	31	4 $\frac{1}{2}$, 5 and 6 in.....	45
2 $\frac{1}{2}$ and 2 $\frac{3}{4}$ in.....	39		

Hot-Rolled

2 and 2 $\frac{1}{4}$ in.....	34	3 $\frac{1}{4}$ and 3 $\frac{1}{2}$ in.....	50
2 $\frac{1}{2}$ and 2 $\frac{3}{4}$ in.....	42	4 in.	53
3 in.	48	4 $\frac{1}{2}$, 5 and 6 in.....	48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40 base.....83 to 85 per cent off list
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

Cents per Ft.		Cents per Ft.	
2-in. O.D. 12 gage....	14 $\frac{1}{2}$	2 $\frac{1}{4}$ -in. O.D. 10 gage..	18
2-in. O.D. 11 gage....	15	3-in. O.D. 7 gage....	33
2-in. O.D. 10 gage....	16	1 $\frac{1}{2}$ -in. O.D. 9 gage....	15
2 $\frac{1}{4}$ -in. O.D. 12 gage..	16	5 $\frac{1}{2}$ -in. O.D. 9 gage....	50
2 $\frac{1}{4}$ -in. O.D. 11 gage..	17	5 $\frac{1}{2}$ -in. O.D. 9 gage....	52

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron.....	\$5.65
Old range non-Bessemer, 51½ per cent iron.....	4.90
Mesabi Bessemer, 55 per cent iron.....	5.40
Mesabi non-Bessemer, 51½ per cent iron.....	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron.....	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus.....	44c.
Manganese ore, Brazilian or Indian, nominal.....	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates.....	\$9.00 to \$11.00
Chrome ore, Indian basic, 48 per cent Cr ₂ O ₃ , crude, per ton, c.i.f., Atlantic seaboard....	22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₂ , New York.....	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt.....	\$3.25
Foundry coke, f.o.b. Connellsville prompt.....	\$4.00 to 4.75
Mine run steam coal, f.o.b. W. Pa. mines.....	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines.....	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines.....	1.25
Gas slack, f.o.b. W. Pa. mines.....	1.30 to 1.40

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid.....	115.00
Ferrosilicon, 50 per cent, delivered.....	\$82.50 to 85.00
Ferrosilicon, 75 per cent.....	145.00 to 147.50
Ferrotungsten, per lb. contained metal....	90c. to 95c.
Ferrocromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered.....	11.50c.
Ferrovandium, per lb. contained vanadium.....	\$3.50 to \$4.00
Ferrocobalt, 15 to 18 per cent, per net ton.....	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....	\$33.00
Spiegeleisen, domestic, 16 to 19 per cent.....	32.00
Ferrosilicon, Bessemer, 10 per cent, \$39.50; 11 per cent, \$42; 12 per cent, \$44.50; electric furnace ferrosilicon, 10 to 11 per cent, \$38; furnace with an advance of \$1 per unit for material above 10 per cent.....	
Silvery iron, 5 per cent, \$27.00; 6 per cent, \$28.00; 7 per cent, \$29.00; 8 per cent, \$30.50; 9 per cent, \$32.50; 10 per cent, \$34.50; 11 per cent, \$37.00; 12 per cent, \$39.50.....	

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines....	\$18.00 to \$19.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines.....	19.00 to 21.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton.....	18.00
Per 1000 f.o.b. works:	
Fire Clay	
Pennsylvania.....	\$43.00 to \$46.00
Maryland.....	48.00 to 50.00
Ohio.....	43.00 to 46.00
Kentucky.....	43.00 to 45.00
Illinois.....	43.00 to 45.00
Missouri.....	45.00 to 48.00
Ground fire clay, per ton.....	6.50 to 7.50
Silica Brick:	
Pennsylvania.....	40.00
Chicago.....	49.00
Birmingham.....	54.00
Silica clay, per ton.....	8.00 to 9.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00
Chrome Brick:	
Standard size, per net ton.....	48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland and Chicago)

Machine bolts, small rolled threads...60 and 10 per cent off list	
Machine bolts, all sizes, cut threads.....	50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads.....	50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes...50 and 10 per cent off list	
Eagle carriage bolts.....	65 and 10 per cent off list
Lag bolts.....	60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads.....	50 and 10 per cent off list
Other style heads.....	20 per cent extra

Machine bolts, c.p.c. and t. nuts, ¾ x 4 in.

45, 10 and 5 per cent off list	
Larger and longer sizes.....	45, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square.....	4c. off list
Hot-pressed nuts, blank or tapped, hexagons.....	4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.10c. off list
Bolt ends with hot pressed nuts.....	50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts.....	45, 10 and 5 per cent off list
Washers.....	6c. to 5.50c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:

¾ in. and smaller, U. S. S.....	80, 10 and 5 per cent off list
¾ in. and larger, U. S. S.....	75, 10 and 5 per cent off list
Small sizes, S. A. E.....	80, 10 and 5 per cent off list
S. A. E., ¾ in. and larger.....	75, 10, 10 and 5 per cent off list
Stove bolts in packages.....	80 and 5 per cent off list
Stove bolts in bulk.....	80 and 5 and 2½ per cent off list
Tire bolts.....	50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

	Per 100 Net	Per 100 Net		Per 100 Net	Per 100 Net
	S. A. E.	U. S. S.		S. A. E.	U. S. S.
¾-in.	\$0.44	\$0.44	¾-in.	\$2.35	\$2.40
¾-in. ....	.515	.515	¾-in.	3.60	3.60
¾-in. ....	.62	.66	1-in.	5.55	5.80
¾-in. ....	.79	.90	1½-in.	8.90	8.90
¾-in.	1.01	1.05	1½-in.	12.60	13.10
¾-in.	1.38	1.42	1½-in.	18.35	18.35
¾-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....	80, 10 and 5 per cent off list
Milled standard set screws, case hardened.....	80 and 10 per cent off list
Milled headless set screws, cut thread.....	80 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread.....	8, 10, 10 and 5 per cent off list
Upset hex. cap screws, S. A. E. thread.....	8, 10, 10 and 5 per cent off list
Upset set screws.....	80, 10 and 10 per cent off list
Milled studs.....	75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.....	\$37.00
Forging billets, ordinary carbon.....	42.50
Sheet bars.....	38.00
Slabs.....	37.00
*Wire rods, common soft, base, No. 5 to ¾-in. 48.00 to 50.00	
Wire rods, common soft, coarser than ¾-in. \$2.50 over base	
Wire rods, screw stock.....	45.00 per ton over base
Wire rods, carbon 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid.....	15.00 per ton over base
Skelp, grooved, per lb.....	2.10c.
Skelp, sheared, per lb.....	2.10c.
Skelp, universal, per lb.....	2.10c.

*Chicago mill base is \$50 to \$52. Cleveland mill base, \$48 to \$50.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E.	Series	Bars
Numbers		100 lb.
2100*	(¾% Nickel, 10 to 20 per cent Carbon)...	\$3.00 to \$3.25
2300	(¾% Nickel)	4.50 to 4.75
2500	(5% Nickel)	6.00 to 6.25
3100	(Nickel Chromium)	3.50 to 3.65
3200	(Nickel Chromium)	5.50
3300	(Nickel Chromium)	7.50 to 7.75
3400	(Nickel Chromium)	6.50 to 6.75
5100	(Chromium Steel)	3.50
5200*	(Chromium Steel)	7.50 to 8.00
6100	(Chromium Vanadium bars)	4.25 to 4.50
6100	(Chromium Vanadium spring steel).....	4.25
9250	(Silicon Manganese spring steel).....	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium).....		4.25 to 4.50
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium).....		4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum).....		4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....		3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum).....		4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

FABRICATED STEEL BUSINESS

No Less Than 53,000 Tons Bought, with Fresh Inquiries for 17,000 Tons

Including 10,000 tons for the Brooklyn Edison Co. and 18,000 tons for the Stevens Hotel in Chicago, bookings of fabricated structural steel in the past week called for 53,000 tons, more than in any other week this year. The volume of fresh inquiries, at 17,000 tons, was surprisingly good. Awards include:

Brooklyn Edison Co., Brooklyn, N. Y., generating station, 10,000 tons, to Levering & Garrigues Co.

Gotham Silk Hosiery Co., New York, factory at First Avenue and Thirty-third Street, 100 tons, to Levering & Garrigues Co.

T. E. Rhoades, New York, apartment, 443-445 East Fifty-first Street, 500 tons, to Taylor-Fichter Steel Construction Co. Atlantic Coast Line, four turntables, 300 tons, to American Bridge Co.

Packing plant, Eleventh Avenue and Fortieth Street, New York, 900 tons, to George A. Just Co.

Oxford Paper Co., Rumford, Me., 200 tons, to Eastern Structural Steel Co.

Germantown Hospital, Germantown, Pa., 500 tons, to unnamed fabricator.

Lycoming County, Pa., two bridges, 400 tons, to Phoenix Bridge Co.

Standard Oil Co., tanks at Bayway, N. J., 2200 tons, to be fabricated in its own shops, and tanks at Charleston, S. C., 400 tons, to American Bridge Co.

City of Baltimore, Md., building for police headquarters, 1000 tons, to unnamed fabricator.

New York *Evening Post*, new building on West Street, 3500 tons, to Bethlehem Steel Co.

City of Akron, Ohio, high school, 400 tons, to unnamed fabricator.

Norfolk-Portland Cement Co., Norfolk, Va., 300 tons, to unnamed fabricator.

St. Vincent's Hospital, New York, nurses' home, 900 tons, to Post & McCord.

Passaic National Bank, Passaic, N. J., 300 tons, to Paterson Bridge Co.

New Brunswick, N. J., telephone exchange building, 500 tons, to Heddon Iron Construction Co.

Garage, 509-525 West Thirty-fourth Street, New York, 1000 tons, to Levering & Garrigues Co.

Hotel and theater building, 224 West Thirty-ninth Street, New York, 1600 tons, to George A. Just Co.

Hub Photofilm Theater, Brooklyn, N. Y., 200 tons, to Heddon Iron Construction Co.

Apartment house, Boston, 240 tons, to Boston Bridge Works.

Mercy Hospital, Pittsburgh, 1500 tons, to Jones & Laughlin Steel Corporation.

General Electric Co., Erie, Pa., 600 tons, to Jones & Laughlin Steel Corporation.

J. B. Campbell Co., Cincinnati, 250 tons, to General Iron Works, Cincinnati.

Stevens Hotel, Chicago, 18,000 tons, to American Bridge Co.

Chicago & North Western Railway, bridge work for 1925, 3500 tons, subject to reduction, to American Bridge Co.

Ure Building Corporation, theater, commercial and apartment building, 1749 Howard Street, Chicago, 975 tons, to Gage Structural Steel Co.

Morton Park high school, Chicago, 680 tons, to Vierling Steel Works.

Tri City Railway Co., Davenport, Iowa, office building, 443 tons, to Rock Island Bridge & Iron Works.

Knights of Columbus clubhouse, Sioux City, Iowa, 152 tons, to Pittsburgh-Des Moines Steel Co.

Jacques J. Kocher, Chicago, department store, 142 tons, to C. F. Anderson Iron Works.

Ensberger Building, Bloomington, Ill., 200 tons, to Mississippi Valley Structural Steel Co.

Smith Engineering Works, Milwaukee, foundry and machine shop, 400 tons, to Worden-Allen Co.

Grove Theater, Chicago, 275 tons; theater, Harding and Lawrence Avenues, Chicago, 225 tons, and Felician Sisters Convent, Chicago, 200 tons, all to A. Bolters Sons.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

State of New Jersey will take bids next month for a bridge over the Navesink River at Red Bank, 1000 tons.

United Electric Light & Power Co., New York, addition to Hell Gate power station, 700 tons.

City of Rochester, subway, 550 tons.

City of New York, subway on Central Park West, 4600 tons.

Perth Amboy, N. J., highway bridge, 300 tons.

State of South Carolina, highway bridge, 250 tons.

Pepperell Mfg. Co., Opelika, Ala., factory, 300 tons.

High school, Cleveland Heights, Ohio, 1200 tons.

Erie Telephone Co., Erie, Pa., 250 tons.

Bennie-Dillon Building, Nashville, Tenn., 800 tons, Nashville Bridge Co. low bidder.

Dows office building, Cedar Rapids, Iowa, 1200 tons.

Standard Paper Co., Kalamazoo, Mich., 375 tons.

Phoenix Utility Co., pipe line, Utah, 1300 tons.

Minneapolis, auditorium, 2600 tons.

Elks' Club, Buffalo, 600 tons, bids taken.

Theater, Milwaukee Avenue and Rockwell Street, Chicago, 900 tons.

RAILROAD EQUIPMENT BUYING

First Quarter Orders Less Than Half of Same Period Last Year

Freight car orders of the past week numbered about 1400 cars. So far buying of the first quarter covered some 21,300 cars against 50,200 for the first three months of 1924. Locomotive orders were for about 240 against 420 for the same period a year ago. Among the items are the following:

The Cities Service Tank Line has ordered 783 tank cars from the American Car & Foundry Co.

The Pennsylvania Salt Mfg. Co. has ordered 10 tank cars from the American Car & Foundry Co.

The Asiatic Petroleum Co. has bought 1 tank car from the American Car & Foundry Co.

The Northwestern Mining & Exchange Co. has ordered 250 pit cars from the American Car & Foundry Co.

The Piedmont & Northern Railroad is in the market for 150 automobile cars.

The Union Refrigerator Transit Co. has ordered 2 refrigerator cars from the American Car & Foundry Co.

The Western Fruit Express has bought 225 steel underframes from the American Car & Foundry Co.

The Nashville, Chattanooga & St. Louis has ordered 2 baggage cars from the American Car & Foundry Co.

The Chicago, Rock Island & Pacific is inquiring for 100 gondola car bodies.

The Florida East Coast is inquiring for 15 Mountain type and 5 switching locomotives.

The Quaker City Tank Line has placed 250 stock cars and 100 refrigerator cars with the General American Car Co.

The Central of Vermont has placed 20 milk refrigerator underframes and 70 flat car underframes with the American Car & Foundry Co.

The New York Central has placed 22 dining cars with the Pullman Car & Mfg. Corporation.

Detroit Scrap Market

DETROIT, March 24.—The market on old material in this district has been practically at a standstill during the past two weeks, with no change in prices as quoted March 10. Several of the largest producers of automobiles have advanced their schedules since March 15 and there is a general feeling that at least the first two months of the second quarter will show a higher melting rate than any month in the first quarter.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$14.75 to \$15.75
Borings and short turnings	11.75 to 12.50
Long turnings	11.75 to 12.25
No. 1 machinery cast	18.00 to 19.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	13.25 to 13.75
Stove plate	16.00 to 17.00
No. 1 busheling	13.25 to 13.75
Sheet clippings	10.75 to 11.25
Flashings	12.50 to 13.00

NON-FERROUS METALS

The Week's Prices

		Cents per Pound for Early Delivery			
		Copper, New York		Lead	
		Lake	Electrolytic*	New York	St. Louis
				Zinc	
				New York	St. Louis
March					
18.....	14.50	14.12½	52.75	8.95	8.65
19.....	14.37½	14.00	53.25	8.90	8.65
20.....	14.37½	14.00	54.25	8.90	8.65
21.....	14.37½	14.00	.....	8.90	8.65
23.....	14.37½	14.00	53.37½	8.90	8.65
24.....	14.37½	14.00	53.62½	8.90	8.65

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, March 24.

None of the markets is particularly active and the price tendency is generally lower. A feeling of uncertainty is quite general. The copper market is very quiet and lower. A moderate business has been done in tin at fairly steady prices. The lead market is quiet at lower levels. Buying of zinc continues light at fluctuating values.

Copper.—With electrolytic copper at the lowest levels of the year, buying has been on a limited scale. Consumers are exceedingly conservative and producers are disinclined to force the market. There seems to be a feeling of uncertainty as to just how much copper will be needed in the second quarter and the present halting of the market is expected to continue until the situation clarifies. Electrolytic copper is available at 14.25c., delivered, for April and May and probably through the second quarter. There is some demand for export, but it is by no means large. Lake copper is quoted at 14.37½c., delivered.

Tin.—Buying of Straits tin has been in moderate volume with the market strong and then weak on alternate days. The most interesting day and the one on which the most business was done was Thursday, March 19. About 500 tons changed hands with pressure to sell on the part of dealers. Sales were made as low as 53c., with London houses the principal buyers. On Friday, March 20, the market was quiet with moderate sales of futures at 54.25c. On the following day the market turned strong, with sales at 54.50c. and 54.37½c. On that day there were more buyers than sellers. Yesterday the market again reversed itself, turning weak, total sales amounting to about 250 tons, with futures changing hands at 53.50c. down to 53.12½c. Today the market has been stronger with sellers reluctant and with buyers at 53.50c. The market closed with spot Straits tin quoted at 53.62½c., New York, and with total sales 200 to 250 tons. Quotations in London today were about £4 per ton higher than a week ago, with spot standard quoted at £245, future standard at £248 5s. and spot Straits, £251. The Singapore quotation yesterday was £251. Arrivals thus far this month have been 4390 tons, with 6235 tons reported afloat.

Lead.—The market is quiet with no features of interest. Prices are a little lower and there is no difficulty in buying the metal in the outside market at 8.90c., New York, or 8.65c., St. Louis, from several sellers. The price of the leading refiner continues at 9c., New York.

Zinc.—While zinc is regarded as the strongest of the four leading metals in this market, its course has continued erratic, largely under the influence of changes in London prices. Producers are comfortably sold and are not inclined to press the market and consumers are well covered for the immediate future. There is little inclination to contract far ahead, owing to some feeling of uncertainty as to the future. Specifications on contracts are large and urgent. Prime Western for early delivery is quoted at 7.30c., St. Louis, or 7.65c., New York. With the London quotations lower than our own, the activity of speculators on both sides is a large factor.

Nickel.—Wholesale lots of shot and ingot nickel are quoted at 31c. to 32c. per lb., with electrolytic nickel available at 38c.

Antimony.—Chinese metal for spot delivery is lower at 14c., New York, duty paid, with March-April shipments from China quoted at 12c. to 13c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, continues unchanged at 27c. to 28c. per lb., delivered.

Old Metals.—Inquiry is a little more active and a better feeling prevails among the trade. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	13.75
Copper, heavy and wire	13.00
Copper, light and bottoms	11.25
Heavy, machine composition	10.25
Brass, heavy	8.75
Brass, light	7.25
No. 1 red brass or composition turnings ..	9.75
No. 1 yellow rod brass turnings	9.50
Lead, heavy	7.50
Lead, tea	6.25
Zinc	4.75
Cast aluminum	19.00
Sheet aluminum	19.00

Chicago

March 24.—All of the metals have again declined on a quiet and weak market. Old metal quotations, however, remain unchanged. We quote, in carload lots: Lake copper, 14.50c.; tin, 54.50c.; lead, 8.65c.; zinc, 7.45c.; in less than carload lots, antimony, 16.50c. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 9.50c.; red brass, 8.25c.; yellow brass, 7.50c.; lead pipe, 7c.; zinc, 4.25c.; pewter, No. 1, 28c.; tin foil, 35c.; block tin, 40c.; all buying prices for less than carload lots.

Arter Company Buys Fraser Grinding Machine Patents

The Arter Grinding Machine Co., 72 Commercial Street, Worcester, Mass., has purchased the patents, patterns, etc., of the automatic cylindrical grinding machine that was developed by the Fraser Machine Co., Westboro, Mass., which has gone out of the business. The Arter company has added the machine to its line, which otherwise comprises rotary surface grinders, lapping machines and magnetic chucks. The new automatic has a capacity up to 5 in. diameter and 5 in. length of grind. The maximum distance between centers is 12 in. Work is loaded into the turret either by hand or automatically, according to its nature. The machine is intended for the production grinding of roller bearing rolls, valve push rods, pistons, piston pins, bushings and other cylindrical work.

Correction in Steel Castings Figures

WASHINGTON, March 23.—The Bureau of the Census has announced corrections in previous statements for bookings of steel castings. [See page 853, THE IRON AGE, March 19.] The total net bookings in February, 1925, as revised is 61,535 net tons, instead of 73,964 tons, while the per cent of capacity was 61.3 per cent instead of 73.7 per cent. The bookings of miscellaneous castings in February, 1925, has been corrected to read 34,298 tons instead of 46,727 tons and the per cent of capacity for the output of this class was changed to 59.8 per cent instead of 81.4 per cent. Minor revisions were made, also, regarding bookings in October, November and December, 1923.

Railroad Property Destroyed by Tornado

The entire shop, Murphysboro roundhouse, storehouse, reclamation plant, freight station, some 60 freight cars and six passenger cars of the Mobile & Ohio Railroad were destroyed by the tornado and consequent fire which swept through the vicinity of Murphysboro, Ill., on March 18. Cost to rebuild is estimated at approximately \$1,500,000. Vice-President E. E. Norris said that the extent of reconstruction and the plans governing it are as yet not decided upon.

PERSONAL

E. C. Felton, formerly president of the Pennsylvania Steel Co., will be the guest of honor at a dinner at the University Club, New York, April 18. The occasion is a reunion of those who were active in the Pennsylvania Steel Co. prior to its acquisition by the Bethlehem Steel Corporation. From 50 to 60 persons will attend. Those in charge of the arrangements are Ross R. Harrison, general manager Manufacturers Iron & Steel Co.; John C. Jay, vice-president J. & W. Seligman & Co., and L. B. Lindemuth of Carney & Lindemuth.

J. J. Hendricksen has retired as secretary-treasurer and director of the Tod-Stambaugh Co., Cleveland, and its affiliated companies, owing to the purchase of control of the company, and has opened an office at 1520 Hanna Building. Mr. Hendricksen has been well known for many years in the iron ore mining and shipping industry.

Frank Hodson, founder and president of the Electric Furnace Construction Co., Philadelphia, and vice-president of its successor, the General Furnace Co., has severed all connections with the latter company and expects to go into business as a consulting engineer and metallurgist specializing on designs, layout, construction and operation of metallurgical plants. During the war he was under the direction of the British Ministry of Munitions, doing special metallurgical work connected with the war, in France, Spain, Sweden, etc. He was sent to the United States on metallurgical matters for the navy department and, late in 1917, formed the Electric Furnace Construction Co. Mr. Hodson has just returned from a three months' trip to South America, where he investigated metallurgical and mining possibilities. His present office is at 200 Jefferson Building, Philadelphia.

Stiles C. Smith has been appointed manager of the Cleveland office recently opened by the Smith Power Transmission Co. He was formerly district sales manager in Ithaca for the Morse Chain Co.

Prof. Arthur M. Greene, Princeton University, has been appointed a member of the Engineering Foundation, New York, representing the American Society of Mechanical Engineers.

John G. Barry, until recently chief geologist of the American Smelting & Refining Co., is now engaged in private practice, with office at 612 Mills Building, El Paso, Tex.

L. C. Henkel, who has been with the United States Steel Corporation in South Chicago, Gary, Pittsburgh and Ensley, has been appointed superintendent of the open-hearth furnace department of the new steel plant of the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala. Other heads of departments will be provided from the Ensley and other plants. The new steel plant has four open-hearth furnaces and will be in operation by May.

James Hartness, president Jones & Lamson Machine Co., Springfield, Vt., formerly Governor of Vermont and president of the American Engineering Council, is seriously ill in Boston. Mr. Hartness has undergone two operations since Feb. 26.

J. J. Flaherty, formerly in charge of welding for the Boston Elevated Railways, will direct sales of Armo, high carbon and low carbon welding rod wire, with headquarters at Bridgeport, Conn., for the Page Steel & Wire Co., Chicago. This was coincident with the forming of a welding service department by the company.

Benjamin F. Brusstar has been appointed district sales manager in Boston territory for the Baltimore Tube Co.

Glen Riegel, for several years metallurgical engineer for the Gerlinger Electric Steel Casting Co., West Allis, Milwaukee, has been appointed works manager. Albert M. Weis, foreman of electric furnaces, has been appointed foundry superintendent.

Morgan W. Price has been appointed to fill the va-

cancy caused by the resignation of James C. Ferris as director of sales and service of the Simmons Co., New York, maker of steel beds and furniture.

George W. Connon, New York, has gone to Havana in the interests of his firm, the Honolulu Iron Works Co. He will be located there for some time.

B. F. McCreary, representing J. K. Larkin & Co. in Long Island and New England territory, has resigned, effective April 1.

Harry H. Leathers has resigned as vice-president of the Schumaker Santry Co. to open an office in Boston as a representative of the Fuller-Lehigh Co. and the Moore Steam Turbine Co.

Howard H. Hersey has been elected treasurer and a director of Bliss & Laughlin, Inc., Harvey, Ill., manufacturer of cold-rolled steel and shafting, and Ward P. Mitchell has been elected assistant vice-president. Mr. Hersey has had 15 years' experience in the steel industry, having been with the Chicago general office of the Illinois Steel Co. from 1909 to 1921, handling general credit and collection functions. In 1921 he became associated with Bliss & Laughlin, as credit manager, in which capacity he will continue along with his new duties. Mr. Mitchell has been in the steel industry for 23 years, having spent 8 years with the Illinois Steel Co. in its South Chicago works, and 10 years, ending with 1920, in its Chicago office, in the order department. In 1920 he became associated with Bliss & Laughlin.

Edgar C. Walthall has joined the sales organization of the Boiler Equipment Service Co., Atlanta, Ga., district engineer of the Conveyors Corporation of America, Chicago. He is a graduate of Georgia Institute of Technology, and was recently superintendent of the fire brick plant of Stevens, Inc., at Stevens Pottery, Ga. He has had experience in marine and heating engineering.

C. O. Barrie, superintendent of equipment and maintenance of the Allis Chalmers Mfg. Co., Milwaukee, sailed for Europe on the Leviathan, March 21.

C. M. Robertson has resigned as vice-president of the Dale Machinery Co., Chicago. He was for many years general superintendent of the Colburn Machine Tool Co., having gone to Chicago as its representative 17 years ago. Later he became associated with the Dale company, becoming Chicago sales manager when the company was absorbed by the Consolidated Machine Tool Co., and later vice-president of the present Dale Machinery Co. Mr. Robertson has not announced his plans.

Dr. George W. Sargent has been elected chairman of directors of the Molybdenum Corporation of America, Pittsburgh. He has been the president of the company since its organization. J. W. Weitzenkorn, formerly vice-president and general manager, will succeed Dr. Sargent as president.

William J. Carroll has resigned as secretary of J. K. Larkin & Co., 253 Broadway, New York, effective April 1. His plans will be mentioned in this column later.

W. S. Race, formerly with the United States Rubber Co. in its New York and Detroit offices, has joined the foundry and industrial engineering organization of the Miller-Hurst Corporation, Detroit.

J. P. Flippen has been appointed district representative for the Farrel Foundry & Machine Co., Buffalo, to handle Sykes gears in western Pennsylvania, eastern Ohio and West Virginia. His territory does not include eastern Pennsylvania as was erroneously stated in THE IRON AGE of March 12. His offices will be at 649 Union Trust Building, Pittsburgh.

L. N. McDonald, for 23 years at the Ohio Works, Carnegie Steel Co., has been promoted to general superintendent, having served as assistant. He succeeds I. Lamont Hughes, recently named a vice-president of the Carnegie company. A. W. Griffith has been appointed assistant general superintendent, having been advanced from superintendent of bar mills. Harry J. Baugh, who has been assistant to Mr. Griffith, has been appointed bar mill superintendent. G. R. Bennett, master mechanic of bar mills, becomes Mr. Baugh's assistant.

OBITUARY

GEORGE BEST, founder and president of the Best Mfg. Co., Pittsburgh, until he retired from business a few years ago, died at his home in Oakmont, Pa., March 17. The Best Mfg. Co. was engaged in the piping, valve and power plant equipment business, first in Pittsburgh and later at Etna, Pa. The plant at Etna now is owned by the Kelly & Jones Co. Mr. Best was born in Pittsburgh 67 years ago.

ALEXANDER DODDS GORDON, manufacturer of automatic water heaters, 231 Franklin Street, Buffalo, died at his home in that city March 21, following a heart attack.

WILLIAM MANLEY, aged 67 years, member of the firm of Leary & Manley, Cincinnati foundry interest, died at the Good Samaritan Hospital in that city last week, following an illness of six months. He was born in Hamilton, Ontario, Canada, and went to Cincinnati when a youth. For the past 45 years he has been engaged in the foundry business.

ELZY BURR VANATTA, president E. B. Vanatta Mfg. Co., Olean, N. Y., manufacturer of hydraulic presses, died at Johns Hopkins Hospital, Baltimore, March 19, following an illness of over two years. He was 67 years of age and was formerly vice-president of the Hydraulic Press Co., Mt. Gilead, Ohio.

WILLIAM L. CURRY, treasurer and a director of the McKeesport Tin Plate Co., Port Vue, Pa., which he helped to organize, died at St. Francis Hospital, Pittsburgh, March 22. He was born in Pittsburgh 50 years ago and was graduated from Massachusetts Institute

of Technology with the class of 1899. Besides his connection with the tin plate company, in which he was a large stockholder, he was treasurer of the Fort Pitt Steel Casting Co., McKeesport, Pa., president of the Pittsburgh Lamp, Brass & Glass Co., Pittsburgh, chairman of directors of the National Fire Proofing Co., Pittsburgh, and a director of the First National Bank of Pittsburgh. He was a member of the Duquesne Club, Pittsburgh.

GEORGE BURRELL HAYES, formerly president of the United States Cast Iron Pipe & Foundry Co., died at his home in Buffalo, March 21, at the age of 84 years. He entered the iron business in 1868, forming the firm of Brown, Drullard & Hayes, which operated the Franklin steam forge in Buffalo. Two years later, Mr. Brown retired and the firm became Drullard & Hayes. This company produced iron pipe by the Scottish method, being the fifth company in the United States to produce pipe under these new conditions. In 1879 Solomon Drullard bought his son's interest in the firm, but the name remained unchanged. When Mr. Drullard died in 1883, Mr. Hayes became sole proprietor and a few years later organized a stock company. A larger plant was built in Box Avenue and Mr. Hayes then became associated with Pascal P. Pratt in the Niagara River Iron Co. He was a former director of the Manufacturers & Traders Bank and the Columbia National Bank. He was a life member and former president of the Buffalo Library and a member of the Academy of Fine Arts, Society of Natural Sciences and a trustee of the Buffalo Seminary. He was commissioner of prisons for New York State in 1896. In 1900 he was elected first vice-president of the United States Cast Iron Pipe & Foundry Co. and became its president, holding that position until a few years ago, but upon retiring he remained a director.

HEAVIER BUYING EXPECTED

President Campbell Gives Reason for Belief That Business Will Improve

YOUNGSTOWN, March 24.—President James A. Campbell of the Youngstown Sheet & Tube Co. expects heavier iron and steel buying to materialize shortly, likely in 30 days or less. He points out that consumers made heavy forward commitments the latter part of last year at the low prices then prevailing and that spring business has not opened up in the way anticipated. To these factors is attributable the current backwardness in finished steel lines.

Mr. Campbell also makes the significant observation that steel-making costs are lower than had been expected, due to lower costs of coal and coke. Such charges will likely stay down, he believes, because of wage rate reductions in the mining regions and to the expectation that the union coal mining scale will have to be revised downward.

Lower costs in this direction, he points out, are making possible lower prices for iron and steel products.

Second quarter buying has not been done in the usual volume and some important activity in this respect is anticipated before the end of March. Heavier demand is manifesting itself for the hoop and band sizes of hot-rolled strip steel, especially from the automotive industry.

In this district, no material change is expected in second quarter prices as compared with those applying during the first quarter.

Perhaps the brightest spot in finished steel in this district is in the tin plate market. The Trumbull Steel Co., for instance, has been operating its tin plate department at a rate close to capacity for several months, and there are no prospects of diminution in requirements.

The Falcon Tin Plate Co. is operating all of its mills at Canton, Ohio, though not wholly on tin plate. In the Shenango Valley, the tin plate capacity of the

American Sheet & Tin Plate Co. is active at a rate close to normal.

The current price of \$5.50 per base box for domestic shipments is applying on tin plate tonnages shipped from the Mahoning Valley.

No Negotiations for Inland Steel Co. Properties, Says President Campbell

YOUNGSTOWN, March 24.—Following a meeting last week of directors of the Youngstown Sheet & Tube Co., to decide upon the location of the company's proposed seamless tube mill, recently authorized to be built at a cost of \$2,000,000, President James A. Campbell stated that no negotiations are under way to acquire the properties of the Inland Steel Co., or to merge with that company.

For some time past, because of its activities in the Chicago district, the name of the Sheet & Tube company has been linked in merger discussions with that of the Inland Steel Co.

President Campbell states the matter of awarding contracts for sheet and tin mills in the Chicago district will be taken up shortly. The seamless tube mill will be located either at East Youngstown in the Mahoning Valley or at Indiana Harbor in the Chicago district, but a definite decision is still forthcoming.

Mr. Campbell said there are no prospects at present of a reduction in wages for iron and steel workers.

Under the laws of New York State, with a capital of \$100,000, the Cosmos Steel Corporation, 17 East 45th Street, New York, has just been formed to export and import steel products. The new company has taken over the business of Otto Kafka, who conducted a similar business in the Woolworth Building, New York, and Mr. Kafka will be associated with the new company in charge of sales. The officers are: George A. Evalenko, president; L. W. Lissberger, chairman of the board; Henry L. Exstein, treasurer, and E. Rockmore, secretary. The new company has also taken over the overseas offices and agencies of Mr. Kafka.

British Non-Ferrous Metals Research

(Concluded from page 895)

resulting from high-temperature treatment, render it suitable for engineering, and particularly for locomotive parts.

Corrosion and Erosion

Experiments have been carried out by Ulick R. Evans to ascertain whether the electric currents, set up by the local abrasion of the surface layers on metals, are capable of causing serious localized corrosion. When the corrosion product is loose and flocculent, the abraded portion is often cathodic, and no localized corrosion need be feared; where the corrosion product is a thin, highly protective film, the abraded place will be the anode, and the currents set up tend to concentrate corrosion upon it. But while localized electrochemical corrosion, due to mechanical removal of the corrosion product, is thus perfectly possible, it seems that in most cases the corrosion will only occur if the abrasion is sufficient to produce also mechanical erosion of the metal itself. The conclusion reached, therefore, represents a compromise between the "corrosionist" and "erosionist" views. The effect of localized removal of high-temperature oxide films has also been studied, and the currents produced between two electrodes of the same metal (one greasy, one ungreasy) have been measured.

The attack of hydrochloric acid on zinc is increased in the early stages by grinding away the "natural surface" with emery, but in the later stages it is decreased by wiping away the black scum of heterophase impurities which accumulate on the surface, and which act as the cathodic member of the corrosion couple—providing, in fact, a material from which hydrogen bubbles are evolved readily. Even in comparatively pure varieties of zinc, which dissolve readily enough (probably owing to the comparative absence of homophase impurities), the bubbles come streaming off from points on the boundaries of the grains, the places where traces of heterophase impurities are situate. Amalgamation restrains corrosion by increasing the overpotential.

Abrasion of Metals

Prof. Kotaro Honda and R. Yamada have measured the amount of wear under different frictional horsepower and under different coefficients of friction with respect to soft metals (copper, cadmium, magnesium, tin, antimony, zinc and bismuth), also carbon steels. They find that in these metals the amount of wear is proportional to the frictional horsepower, provided that the coefficient of friction is constant. The amount of wear of these metals and steels under a constant frictional horsepower increases with the coefficient of friction. The effect of the velocity of abrasion on the amount of wear is negligibly small.

Boundaries of the Phase Fields

R. Genders and G. L. Bailey have obtained values for the crystal density of the brasses in equilibrium, over the range of composition used industrially. A phenomenon, not previously observed in any alloy, consisting in a reduction of density, due to unsoundness accompanying constitutional change (β to α), has been found to occur in the brasses over a considerable range of composition. The unsoundness produced is removable either by reversing the constitutional change (as by quenching) or by mechanical compression.

Although only a relatively small range of density is affected by the changes observed, the close agreement among large numbers of results from several alloys leaves no doubt that the effect was real. The conclusion is reached that such "unsoundness" cannot be of the visible type, but that the cavities may be of atomic dimensions. It is possible that they are formed at the boundaries of inclusions or other metallic discontinuities, where alteration in crystal structure might conceivably affect contact.

From a practical point of view, it is of particular interest that heat treatments, involving quenching of the α - β brasses and a small range of the α brasses,

may give rise to internal stresses of considerable magnitude, consequent on constitutional changes taking place during quenching. The cracking of heat-treated articles which sometimes occurs appears to be attributable to constitutional volume change rather than to the difference between the expansivities of the different constituents.

Annual Meeting of Dominion Steel Alloy Corporation

At the annual meeting of the Dominion Alloy Steel Corporation, Sarnia, Ont., the following directors were elected: President, W. B. Boyd, Toronto; C. A. Orr, Cleveland; R. V. Desueur, Sarnia; C. Harold Wills, Marysville, and W. H. Kenny, Sarnia. In his report President Boyd stated that the company is making good progress with the erection of the first unit of its steel plant at Sarnia, and that the sheet mill is now nearing completion and will be producing galvanized sheets about April 1. The capacity of the first unit of the plant will be 30,000 tons per annum. The plant will be erected in three units, the first of which is nearing completion at a cost of about \$3,500,000, other units to follow as conditions warrant.

Boom in Czecho-Slovakian Iron Industry

The Czecho-Slovakian iron industry is very busy lately and the large iron works are blowing in more blast furnaces. The production of pig iron amounted to 1,050,000 tons during 1924, against 800,000 tons during 1923 and that of steel to 1,350,000 tons against 1,000,000 tons. This is a remarkable increase compared with 1922, when the output of steel totaled only 440,000 tons. The 1924 iron exports amounted to 359,000 tons, valued at 750,000,000 kronen (about \$22,000,000). During 1923 the exports were considerably higher, (566,000 tons valued about \$28,500,000), owing to the large amounts sent to Germany on account of the occupation of the Ruhr district.

Group Insurance

The Nichols Copper Co., refiner of copper, New York, has arranged a group insurance program on a cooperative basis, affecting more than 600 employees to an amount exceeding \$1,000,000. This was emphasized as being an expression of the company's appreciation of loyalty and cooperation by employees, and that all were included in the offer, regardless of sex, color, age or physical condition, no medical examination being required. Policies range from \$1,000 for rank-and-file employees to \$4,000 for department heads. A proviso fixes monthly income for a definite period to an employee totally and permanently disabled before age 60.

Polish Iron Syndicate

The question of forming a strong organization in the iron industry is largely ventilated among the Polish ironmasters. The antagonism between the former German Upper Silesian iron works now belonging to Poland and those in Kongress Poland is gradually disappearing, so that there is a greater possibility of establishing an iron syndicate now. It is proposed to fix the quotas on the basis of a 12-month pre-war output. Though the question of the quotas is still a subject of dispute, the establishment of the syndicate during the next few months seems to be assured.

"What are the Future Possibilities in Gear Manufacturing Equipment?" an address by F. W. England, vice-president Illinois Tool Works, Chicago, will be among the features of the ninth annual meeting of the American Gear Manufacturers Association, to be held at the William Penn Hotel, Pittsburgh, May 6 to 9 inclusive. Another address will be on "The Gear Industry on the Pacific Coast," by Frank B. Drake, president Johnson Gear Co., Berkeley, Cal.

NEW CODE PROPOSED

Secretary Hoover Would Give Greater Protection to American Patents

WASHINGTON, March 24.—Drafting of a new code of patent laws so as to provide greater protection to American manufacturing interests than now exists is being contemplated by Secretary of Commerce Hoover as the result of the transfer last week by executive order of the Patent Office from the jurisdiction of the Department of the Interior to that of the Department of Commerce. The transfer, approved by Secretary of the Interior Hubert Work, is looked upon as the first of a number of changes to be made in connection with reorganization of Government departments along the line suggested by the Congressional Commission which was created at the request of President Harding.

The law establishing the Department of Commerce gives discretionary authority to the President to place such regular Government bureaus as he might select under the control of the department. For this reason no legislative action was necessary to transfer the Patent Office to the Department of Commerce, but other changes are not expected to be made until after formal action has been taken by Congress.

The Patent Office was originally a part of the State Department. It was created in 1790 and had been a branch of the Department of the Interior since 1849.

CANADIAN PRICES LOWER

Pig Iron Declines \$1, but Steel Business Shows General Improvement

TORONTO, ONT., March 24.—The general quiet state that has featured the Canadian pig iron market for some weeks past, together with the slump in prices in the United States, has been reflected in a drop of \$1 per ton in prices in the Toronto and Montreal markets. The new prices which went into effect on March 16 are the first changes since the sharp advance reported toward the close of last year, and are as follows: No. 1 (2.25 to 2.75 silicon), \$27.80; malleable, \$27.80; No. 2 (1.75 to 2.25 silicon), \$27.30, Toronto. On account of the difference in freight rates between the two points, Montreal prices are about \$2.40 per ton higher, as follows: No. 1 and malleable, \$30.20; No. 2, \$29.30.

During the past month, local blast furnace representatives have been continually reporting a quiet demand for pig iron. Melters have been showing very little interest in the market and in practically all cases the demand has been confined to lots of from 50 to 100 tons for spot delivery. While the large majority of Canadian melters are pretty well booked up for this quarter and some have partly covered for second quarter, there is very little interest being shown in requirements for second quarter and it is generally understood that melters both in Ontario and Quebec have still to make known their requirements for the latter period.

General improvement has featured the iron and steel industry of Canada within the past six weeks, especially from the standpoint of mill activities. Mills at Sault Ste. Marie, Ont., and at Sydney, N. S., have booked large rail orders and as a result these plants are now running close to capacity. The Steel Co. of Canada, Ltd., Hamilton, Ont., which specializes in a diversified line of steel products, is running about 65 per cent. Increased activities at the various steel plants have resulted in increased production of pig iron and within the past month two additional blast furnaces have been blown in, making a total of five at the present time, as follows: British Empire Steel Corporation, Sydney, N. S., two; Algoma Steel Corporation, Sault Ste. Marie, Ont., two, and the Steel Co. of Canada, Ltd., Hamilton, Ont., one. The improved conditions have not been reflected in foundry activities. Taken as a

In commenting upon the plans to revise the patent laws and improve them for the benefit of American manufacturers, Secretary Hoover said that it is intended to undertake a vigorous campaign for the removal of injustices toward American patentees and American manufacturers which exist by virtue of the character of patent laws in many other countries. He pointed out that at present an American patentee is required in many foreign countries to manufacture continuously abroad or lose his patent rights, a requirement that is not made by the United States and which results in American inventors and manufacturers being forced to establish plants abroad while at the same time foreign patentees can use their patents in the United States fully protected, without having to manufacture in this country. Mr. Hoover said there are other discriminations now in progress and pointed out that the American Government will be represented at an international convention for the protection of industrial property at The Hague, Oct. 8, where proposals will be made for the equitable and equal treatment of patentees in all countries.

"If this convention shall fail to secure primary justice for American patentees," Mr. Hoover said, "we shall ask for a complete revision of the patent laws of the United States which will bring this about."

At present the Patent Office is seven months behind in its work, as against 15 months four years ago and Mr. Hoover said it is hoped to bring the work up to date within a short period.

whole, foundries are running only about 50 per cent capacity, with a few jobbing foundries operating as high as 70 per cent.

Canadian melters are importing special grade iron and iron for use in the manufacture of agricultural implements, but practically the entire imports are from the United States. During the month of January last, imports of pig iron into Canada amounted to 1093 tons, which compares with 3132 tons for the corresponding month last year. Canadian pig iron exports also show a falling off as compared with those of a year ago. During January, 1925, exports of pig iron from this country amounted to 687 tons, as compared with 2656 for the corresponding period of 1924.

Despite the fact that very little business is being done in the Canadian pig iron market on new order account, there is a good demand for iron against old contracts, with the result that a large volume of iron is continually moving between producers and consumers. Local blast furnace representatives are optimistic when speaking of future prospects and practically all look for a resumption of buying on second quarter account within the next two or three weeks.

Report of Columbia Steel Corporation

In the consolidated balance sheet of the Columbia Steel Corporation, total current assets as of Dec. 31, 1924, were \$3,915,595, against current liabilities of \$2,579,876. Surplus stood at \$897,390. Gross profit from sales over the year was \$1,299,225, on which net profit of \$760,225 was realized. After deducting interest, provision for Federal taxes and other income charges, there remained net income of \$295,107. At the annual meeting all directors and officers were re-elected.

President W. E. Creed said: "Considering the condition of the steel industry in 1924, the showing of the Columbia Steel Corporation is highly satisfactory." All of the company's developments and new plants were completed and placed in full operation in 1924. During the year, bonded debt was increased \$1,000,000, current liabilities increased \$1,300,000, and additional preferred stock issued to the amount of \$525,000. This money was used chiefly in the development of the Utah properties, where over \$2,600,000 was expended in 1924. In the same period additions to plant at Pittsburgh aggregated \$350,000, and at Los Angeles (Torrance) \$125,000.

Plans of New Companies

The Associated Metal & Minerals Corporation, 100 East Forty-second Street, New York, has been organized with 5000 shares of no par common stock and 3000 preferred shares at \$100 par, all paid in to operate as importer and exporter of non-ferrous metals and minerals. It is virtually successor to Charles Hardy, Inc., and will follow the same general line, extending its representation in various foreign countries. Charles Hardy is president, A. J. Hesler, secretary, and E. E. Lefune, assistant treasurer.

The Super-Trol Laboratories, Inc., New York, has been incorporated with \$100,000 capital stock to develop wireless instruments and apparatus. The incorporators are I. S. Roth and W. L. Williams, 43 West Eighteenth Street.

The Rosedale Engineering Corporation, 1301 Commonwealth Avenue, New York, is incorporated with \$30,000 capital stock to manufacture mechanical products. The company is now active. R. Kirschstein, L. Barnett and Y. Stahl are the incorporators.

The Fitzpatrick Puller Corporation, 3 Coenties Slip, New York, recently incorporated with \$25,000 capital stock and 1000 shares of no par value stock, has started operations in its plant at New Brunswick, N. J., on apparatus for stump pulling. While initial output is not yet large, the company has yearly capacity for about 10,000 machines. Walter J. Fitzpatrick is president.

The Ace Machine Co., Inc., 517 East Thirty-second Street, Paterson, N. J., has been organized to manufacture mechanical rubber goods, molds and special machinery and to do contract work. Its capitalization is \$125,000. Operations have been started. Angelo Givone and Charles Wilde are the principals.

The Bossard Electric Home Service, Inc., Cannon Building, Troy, N. Y., has been incorporated with \$110,000 capital stock, naming broad manufacturing activities, but planning for the present to confine itself to the distribution of electric household equipment through its branches at Albany, Troy and Schenectady. R. W. Hewes is assistant secretary.

D. H. Boley & Co., Inc., 8 West Fortieth Street, New York, has established an extensive selling organization in New Jersey, New York, eastern Pennsylvania and New England, and will act as manufacturers' agent for radio products. E. H. Boley, president of the company, was for many years connected with the Cyclops Steel Co. as secretary-treasurer.

The Perfection Spring Co., Franklin Street and St. Aubin, Detroit, has been organized with \$30,000 capital stock to manufacture bed springs, upholstering and automobile constructions. It has rented space for operation, has installed the necessary equipment and in about two weeks will begin production.

The Vogt Refrigerator Co., Louisville, Ky., recently incorporated with \$300,000 capital stock, will engage in manufacturing all-metal household refrigerators, being successor to the Vogt Mfg. Co., organized two years ago. It has begun the construction of an addition to the plant now occupied, which will afford 45,000 sq. ft. of floor space. The company expects in the first year to produce about 20,000 refrigerators. Benjamin Vogt is president and general manager; George C. Weldo, vice-president, and M. C. Schimpeler, secretary-treasurer.

The Corbett Faucet Sales Co., Seattle, Wash., has been organized to manufacture a new design of faucet which will be made by contract through a shop closely allied with the corporation. Eventually it is planned to merge these organizations. Later the company will be in the market for quantities of rolled bronze and also tubing. H. A. Pearce is president.

The Stevenson Corporation, G. Charter Harrison Associates and J. P. Jordan have formed a partnership to engage in management and industrial engineering works. The Stevenson Corporation, organized in 1916, has specialized in production work and in producing incentive methods of wage payment. Mr. Harrison of G. Charter Harrison Associates, formed in 1916, has had considerable experience in cost methods, in which field J. P. Jordan also has specialized.

The E.-P. Equipment Co., 16 Blount Street, Providence, R. I., has been organized to manufacture devices associated with the electrical signal industry. These will be built for the most part in its own plant, but a few items may be made by contract. H. Arnold is secretary.

The Oakley Foundry Co., Cincinnati, has been incorporated with a capital of \$300,000 to engage in the general foundry business. The company will erect a plant

shortly, but the location and the size of the building have not yet been announced. Incorporators of the company are Forrest T. Crane, George Meyerratken and Harry J. Buettinger, all of whom are with the J. A. Fay & Egan Co., Cincinnati, Ohio.

The Guide-O-Light Co., New London, Conn., will manufacture automobile specialties, the present plan being to manufacture at New London. E. T. Haskell is president.

The Accurate Steel Treating Co., recently incorporated with \$15,000 capital stock, has leased quarters at 12 North Campbell Avenue, Chicago, and has purchased equipment to do a general line of commercial steel treating. The company, however, expects to be interested from time to time in furnaces, pyrometers, tumblers, sand blast equipment, etc. Officers are T. E. Barker, president; V. W. Oller, treasurer, and Ralph W. Brookes, secretary.

The Arizona Lead Mines Co. has been organized to operate the Schuylkill-Tennessee Mines at Chloride, Mohave County, Arizona. B. X. Dawson of the Southern California Investors Corporation, Marsh-Strong Building, Los Angeles, Cal., is one of the principals.

Ford's Milker, Inc., 213-15 North Desplaines Street, Chicago, recently incorporated with \$10,000 capital stock, will manufacture a milking machine. At present all work is being done by contract. Officers are D. W. Myers, president, and R. L. Sherman, secretary.

Industrial News Notes

Plant of the Columbia Motor Co. at Charlevoix Avenue and Detroit Terminal Railroad, Detroit, has been sold to the Budd Wheel Co., Philadelphia, the sale having been confirmed by the bankruptcy court. Land area consists of 23 acres and buildings contain about 180,000 sq. ft. of floor space.

E. W. Driemeyer, president and one of the founders of the K-D Auto Lamp Co., Cincinnati, has sold his interests in the company to H. R. Kerans, Ward Earley and others. Under the reorganization Mr. Kerans will be president and general manager and Mr. Earley will be vice-president. C. C. Clark will be secretary-treasurer. The company manufactures automobile lamps for the jobbing and replacement business. It started business in 1917 with an investment of \$10,000. Its balance sheet shows a net value today of \$325,000.

A. H. Troyke, Cincinnati, plant broker and liquidator, has announced the sale of the Aurora Tool Works, Aurora, Ind., to the Oesterlein Machine Co., Cincinnati, which will take over equipment, patterns, drawings and good will of the Aurora company and continue to manufacture the Aurora upright drill which will be built in the future in Cincinnati at the plant of the Oesterlein Machine Co. Mr. Troyke stated that the Aurora Tool Works, of which A. Kaftner was president and James Rush secretary and general manager, is not going out of business on account of financial difficulties.

The Birmingham Stove & Range Co., Birmingham, Ala., is now erecting a warehouse 140 x 200 ft. in which products of the company will be stored to meet increasing demand. This company a short time since began the manufacture of gas ranges and is marketing this product through utility companies of the South. The erection of a sheet mill by the Tennessee Coal, Iron & Railroad Co. will further expedite the manufacture of gas ranges and other similar products.

The Board of Water Commissioners of Denver has placed an order for a 15,000,000 gal. De Laval centrifugal pump made by the De Laval Steam Turbine Co. This makes the fourth De Laval unit installed by the Denver waterworks system.

The Trico Fuse Mfg. Co., Milwaukee, manufacturer of time-limit renewable fuses, announces a new line of non-renewable cartridge fuses, built in all standard sizes from 0 to 600 amp.

John D. Cronenweth, president Great Lakes Foundry Sand Co., Detroit, reports foundry conditions steadily improving. The company's orders on file for March shipments will average 15 carloads per day for the next 30 days.

A. Milne & Co., steel and iron merchants, New York, have appointed the Dunham, Carrigan & Hayden Co., Kansas and Division Streets, San Francisco, as representatives for drill steel and tool steel in California, Nevada and the Hawaiian Islands. Frank K. Lukey, who has been with A. Milne & Co. for over ten years, has been appointed Western manager, making headquarters with the representative in San Francisco.

STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	79 1/2	84	Int. Har. pf.....	114 1/2	114 1/2
Allis-Chal., pf....	105	105 1/2	Jones & L'hlin pf.	114 1/2	114 1/2
Am. B. S. & Fdy. 95 1/2	98 1/2		Lima Loco.....	64 1/2	68 1/2
American Can ..	169 1/2	181 1/2	Nat. Acme	4 1/2	5
American Can pf.	177 1/2	177 1/2	Nat. En. & Stm.	30 1/2	33
Am. Car & Fdy. 205	223 1/2		Nat. En. & S. pf.	83	83
Am. Locomotive 129	137 1/2		N. Y. Air Brake.	43 1/2	47
Am. Loco. pf....	118 1/2	118 1/2	Otis Steel.....	8	9
Am. Radiator....	94	96 1/2	Otis Steel pf....	50 1/2	54 1/2
Am. Steel Pdrles. 48	50 1/2		Pressed Steel Car	56	62 1/2
Baldwin Loco....	123 1/2	135	Pressed Steel pf.	85	86
Bald. Loco. pf....	112	113	Replogle Steel....	13 1/2	17 1/2
Bethlehem Steel.	39 1/2	44 1/2	Republic	48 1/2	54 1/2
Beth. Stl. 7% pf.	95 1/2	96 1/2	Republic pf.....	88 1/2	89
Beth. Stl. 8% pf.	109	111	Sloss-Sheffield ..	83 1/2	87
Br. Em. Steel....	3	3	Sloss-Sheffield pf.	94 1/2	94 1/2
Br. Em. Stl. 2 pf.	10	10 1/2	Superior Steel....	26	29 1/2
Chic. Fneu. Tool. 80 1/2	85		Transue-Wms.	27	27 1/2
Colorado Fuel....	35 1/2	43 1/2	Un. Alloy Steel....	26 1/2	29 1/2
Crucible Steel....	66 1/2	76 1/2	U. S. Pipe.....	180	219 1/2
Crucible Stl. pf..	95	95 1/2	U. S. Pipe pf....	102 1/2	103 1/2
Deere pf.....	91	91	U. S. Steel.....	119 1/2	124 1/2
Gen. Electric....	257 1/2	273 1/2	U. S. Steel pf....	122 1/2	123 1/2
Gt. No. Ore Cert. 33 1/2	36 1/2		Vanadium Steel....	25	27 1/2
Gulf States Steel. 72	78		W'house Air Br..	101 1/2	104
Inland Steel.....	44	45	Yo'town S. & T..	69	71 1/2
Int. Harvester....	101 1/2	104			

Industrial Finances

The General American Tank Car Corporation shows total assets as of Dec. 31, 1924, of \$34,870,734, against \$40,104,480 at the close of the previous year. Profit and loss surplus totaled \$11,407,374, compared with \$10,958,404 in 1923.

The plant of the Westcott Motor Car Co., Springfield, Ohio, will be sold at public auction in April by order from the United States District Court. Joseph M. Rehe, receiver, is special master in the sale. The court order contemplates sale of even the name "Westcott" as among the assets. Auction will be held at the Clark County Court-house, Springfield.

The Otis Elevator Co. reports net income for 1924 of \$4,161,510 after depreciation, Federal taxes, contingency and other reserves. This compares with \$2,983,705 earned in 1923.

The Woodward Iron Co., Woodward and Birmingham, Ala., maker of pig iron, has sold \$1,396,000 first and consolidated 5 per cent sinking fund bonds dated Jan. 1, 1912 and due in 1952, the balance of the amount issued to retire Birmingham Iron Co. 5 per cent bonds due in April, next year.

Appointment of a receiver to take charge of the Cincinnati branch of the Dealers' Supply Co., Indianapolis, buyer and seller of agricultural implements, was asked in a suit filed in the Common Pleas Court of Hamilton County, Ohio. A receiver was appointed on Feb. 7. It is set forth that the company owes \$125,000, and, while assets exceed liabilities, it is pressed for funds to meet pending obligations. It is also set forth that a sale of the Cincinnati assets has been arranged with the Monarch Auto Co., a Kentucky corporation, for \$19,623.

Net profits of the Chicago Pneumatic Tool Co. for 1924, after interest, taxes and other charges, were \$630,248 compared with \$812,036 in the preceding year. Despite the depression dividends were earned and a small balance was carried to surplus. In contrast to previous years, the foreign subsidiaries returned a profit for the year. Export business showed a healthy increase.

Consolidated balance sheet of the Donner Steel Co. for 1924 showed current assets of \$6,387,579 and current liabilities of \$1,939,379, leaving working capital slightly under that at the end of 1923. Profit and loss surplus stood at \$1,176,188 against \$633,411.

The Hayes Wheel Co. and subsidiaries report net profits for 1924 of \$715,264, after charges. This compares with \$1,302,067 in 1923. Balance sheet as of Dec. 31, 1924, shows surplus at \$3,373,003 against \$4,041,397 at the end of 1923.

Net income of the New York Air Brake Co. for 1924 was \$1,239,397 against \$2,526,487 for 1923. Total income for the year compared with that for 1923 as \$2,358,195 to \$4,013,697. President C. A. Starbuck said new business in 1925 has been well ahead of the same period last year and the outlook is encouraging.

The Triumph Electric Co., Cincinnati, has been placed in the hands of a receiver, Sanford Brown, as the result of a suit filed by the Rome Wire Co., a creditor, in the Common Pleas Court of Hamilton County, Ohio. The Triumph company is a million dollar corporation which has been operated for more than a year by John L. Richey as comptroller, under an agreement by the creditors.

The Midwest Forging Co., First National Bank Building, Chicago, with plant at Chicago Heights, Ill., has increased its capital stock from \$40,000 to \$75,000.

Loss Shown by Otis Steel Co.

The Otis Steel Co., Cleveland, reports a loss for 1924 of \$1,479,141 compared with a net profit of \$1,360,893 in 1923. The unfavorable showing last year, it was explained by President E. J. Kulas, to stockholders, is due partly to operating difficulties with some of the new units, but more particularly to the unsatisfactory steel prices that prevailed. Last year the company rebuilt 51 coke ovens and completed its sheet bar mill. The balance sheet shows current assets of \$6,509,298 against \$3,266,414 in current liabilities. The inventory was reduced \$2,116,914 to \$4,728,191 and accounts receivable were \$923,672 lower. A reduction of \$289,000 was made on the company's 8 per cent bonds and \$222,500 on the 7 1/2 per cent bonds.

Colorado Fuel & Iron Co. Earnings

Total net income of the Colorado Fuel & Iron Co. in 1924 was \$4,628,503, compared with \$4,992,680 for 1923. Gross operating receipts came to \$39,297,320. After depreciation, interest and taxes there was a balance of \$520,285 carried to profit and loss, against \$732,029 the previous year. Gross receipts from sales last year were \$39,297,320, \$1,040,032 higher than in 1923. Total current assets at the end of 1924 were \$13,796,794, against current liabilities of \$3,572,695.

President J. F. Welborn said that the hope for better business and improved operating results for 1924, expressed in the preceding annual report, was not realized owing to substantial declines in prices. Additional improvements for this year, including equipment for cleaning blast furnace gases, an electric power plant, turbo-blowers for blast furnaces and motor drives for various mills, to cost about \$3,750,000, have been authorized.

Crucible Steel Co. Shows Good Surplus

An increase in surplus of \$618,946 was reported by the Crucible Steel Co. of America in its consolidated balance sheet as of Feb. 28. Total profit and surplus stood at \$112,195,139 compared with \$111,576,193 shown on Aug. 31, 1924. Unfilled orders at the end of February were 140,446 tons, the largest in four years, and comparing with 49,252 tons on Aug. 31, 1924, and 77,106 tons on Feb. 28, 1924. Current assets were \$29,668,090 compared with current liabilities of \$3,291,823. Cash on hand dropped from \$5,206,729 on Aug. 31 to \$2,689,953 on Feb. 28. Chairman H. S. Wilkinson told stockholders that business in the last three months has shown a marked and steady increase.

National Acme Report

The National Acme Co., Cleveland, reports net loss of \$622,649 for 1924, compared with net profit of \$240,717 in 1923. Sales were \$7,300,402 against \$9,586,316 in the previous year. The report shows an operating loss for the year of \$103,929. President A. W. Henn in his annual report refers to the program of curtailment and concentration carried out during the year including the grouping of manufacturing in Cleveland in one plant and the discontinuance of the Montreal plant. He states that for the first time since the armistice the foreign field presents a promising outlook.

M. A. Hanna Co. Loss

The M. A. Hanna Co., Cleveland, reports a loss of \$437,407 in 1924 after deductions for interest on its bonded debt as compared with a profit of \$3,761,961 the year before. After allowing for depreciation there was a deficit applicable to the M. A. Hanna Co. stock of \$1,160,492 and to the minority stock holdings in various companies of \$491,079. After paying dividends, etc., the surplus was reduced from \$4,693,096 to \$1,885,542.

The Anchor Drawn Steel Co., Latrobe, Pa., has established sales representatives throughout the country. The Craine-Schrage Steel Co., 6189 Hamilton Avenue, Detroit, is representative for Michigan; Priest, Page & Co., 80 Batterymarch Street, Boston, for northern New England; John S. Pendleton, 52 Vanderbilt Avenue, New York, in the New York district and southern New England; W. A. Laub Co., Franklin Trust building, Philadelphia, in eastern Pennsylvania and E. R. Hensel Steel & Copper Co., Planters Building, St. Louis, in Missouri and Kansas.

The Whitlock Coil Pipe Co., Hartford, Conn., has moved its Boston sales and engineering office from 514 Atlantic Avenue to 6 Beacon Street.

Machinery Markets and News of the Works

MARKET VERY QUIET

No Unusual Activity in Machine-Tool Trade —Sales Are in Small Lots

Long Island Railroad, It Is Reported, Will Enter the Market for a List of Tools to Equip Shop That Burned

In all sections the demand for machine-tools and allied equipment is limited to scattered orders for individual machines, and the aggregate is small. In some markets the situation is described as "depressingly quiet."

The New York trade is looking for a list from the

Long Island Railroad, which is expected to replace equipment in a shop which burned recently. Other railroad activity is of a minor character. The Santa Fe has put out a few additional inquiries and the Northern Pacific is in the market for a few tools. The Burlington is expected to issue a large list in about two weeks.

In the automotive industry the only outstanding order reported is for 19 turret lathes by the Nash Motors Co., Racine, Wis.

The Birmingham School Board is inquiring for 14 tools for a new high school building.

The Universal Boring Machine Co., Hudson, Mass., has appointed Wilson-Brown, Inc., 2 Rector Street, New York, as selling agent for eastern New York State and northern New Jersey.

New York

NEW YORK, March 24.

INQUIRIES from Russia for machine tools are a feature of the current demand, but there is some doubt as to how much business may actually develop because of the credit arrangements asked for. Some of these inquiries have come from the Amtorg Trading Corporation, which is sometimes described as an official representative of the Russian Government. This corporation has recently removed from 136 Liberty Street to larger offices at 165 Broadway, New York, and is figuring on a good deal of American equipment of various types. General machine-tool buying has amounted to very little in the past week. Many of the pending inquiries from railroads and industrial companies are quiescent, with no certainty as to when action will be taken. The American Steel Foundries have bought two 53-in. boring mills. The Bucyrus Co., Bucyrus, Ohio, has bought a 27-in. x 20-ft. engine lathe. The Florida East Coast Railway has ordered a driving wheel lathe.

Bids will be received by the superintendent of light-houses, Staten Island, until April 14 for eight engine-driven generator plants, each 4½ to 5 kw., consisting of either two or three generator units; until April 6 for seven steel acetylene buoy bodies riveted construction, with superimposed structural steel lantern towers and bottom counterweight.

The Madison Iron Works, 449 East 120th Street, New York, will soon ask bids for a two-story plant, 75 x 100 ft., at Radel Avenue and Tiffany Street, to cost approximately \$55,000. George A. Bagge & Sons, 299 Madison Avenue, are architects.

The chairman of the Government Railway Board, Wellington, New Zealand, is asking bids until April 28 for 65 electric motors for Government railroads.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until April 7 for 32 chain hoists for the South Brooklyn navy yard, schedule 3488; for magnet wire for the same yard, and 25,000 ft. ignition cable for Mare Island, schedule 3478; until March 31 for two electric bake ovens for South Brooklyn, schedule 3463.

The Council of Ministers, Cairo, Egypt, has approved a fund of about \$9,000,000, to be made by the Ministry of Communications on Egyptian State Railways for 1925-26, including the purchase of locomotives, freight cars, passenger cars, rails, signals and other equipment. William E. De Courcy, vice-consul, Bureau of Foreign and Domestic Commerce, Cairo, has information regarding the project.

The United States Plywood Corporation, 314 West Sixteenth Street, New York, Lawrence Ottenger, president, has leased the five-story building, 75 x 122 ft., at 603-7 West

Thirty-sixth Street, for extensions. Improvements will be made to cost about \$15,000.

The F. D. Lincoln Co., Inc., 50 Church Street, New York, machinery dealer, is in the market for several steel guy derricks, 20 to 50 tons capacity, suitable for quarry service; also for a jaw crusher, Champion or equal type, and one steel erector's guy derrick, 7½ tons capacity, 70 to 80 ft. boom.

The Bokima Ice Co., Inc., Peekskill, N. Y., care of Berthelot & Zimmer, 41 East Forty-second Street, New York, engineers, has plans for a one-story ice-manufacturing plant, 60 x 145 ft., to cost \$100,000 with machinery.

The Blindschor Garage Co., Inc., 44 Court Street, Brooklyn, David Binder, president, has filed plans for a two-story service, repair and garage building, 97 x 155 ft., at 320-30 East Twenty-second Street, New York, to cost approximately \$92,000. John De Hart, 1039 Fox Street, Bronx, New York, is architect.

The Long Island Railroad Co., Pennsylvania Terminal, New York, has awarded a general contract to the Turner Construction Co., 242 Madison Avenue, for rebuilding the portion of its repair shops at Morris Park, N. Y., recently destroyed by fire with loss of about \$500,000 including equipment. L. W. Morris is chief engineer.

The Consolidated Can Corporation, 390 Hudson Street, New York, has leased a building at 189-91 Academy Street, Long Island City, for a new plant.

The General Ceramics Co., 50 Church Street, New York, manufacturer of sanitary ware, is having plans completed by Dietrich Worthmann, 116 Lexington Avenue, architect, for its proposed addition at Metuchen, N. J., to be one-story, 115 x 320 ft., with kiln department, to cost close to \$250,000 with machinery.

Charles Schaefer, Jr., Third Avenue and 148th Street, New York, architect, has plans for a two-story automobile service, repair and garage building, 70 x 200 ft., at 529-33 West 134th Street, to cost about \$100,000.

The Board of Water Commissioners, City Hall, Perth Amboy, N. J., is planning for the complete electrification of the water pumping station at Runyon, and has requested a fund of \$45,000 from the Board of Aldermen for the purchase of motors, pumping machinery, switchboard, and other equipment.

The Board of Education, Delanco, N. J., is considering the installation of manual training equipment in the proposed high school to be erected, estimated to cost \$125,000. Herbert Zeigler, 17 Washington Street, Riverside, N. J., is architect.

The Public Service Electric & Gas Co., Terminal Building, Newark, N. J., is planning the early erection of two automatic power substations on Valley Road, Montclair, and on Bloomfield Avenue, Bloomfield, respectively, each with capacity of 20,000 kva. The company has work in progress on an automatic substation and a switching station at its new power plant at Kearny, N. J.

The Crane Market

THE volume of inquiry for electric overhead cranes shows a slight decline, but there is still considerable business pending. There is a fair amount of inquiry for locomotive cranes, but purchasing is light. The Pennsylvania Railroad, Philadelphia, is in the market for a gantry crane similar to two that have been purchased recently. The Power Construction Engineering Co., Worcester, Mass., reported to have purchased a 35-ton, 26-ft. span power house crane last week, closed with the Northern Engineering Works. The Southern Pacific Co. is expected to close this week on the 40-ton locomotive crane, for which it has been in the market for several weeks. The inquiry of the Chile Exploration Co., New York, for locomotive cranes for export is still pending.

Among recent purchases are:

Mystic Iron Works, Boston, a 55-ton ladle crane from the Cleveland Crane & Engineering Co.

Foscale Iron Works, Guttenberg, N. J., a 5-ton, 42-ft. span, double I beam hand power crane with electric hoist from Alfred Box & Co.

Pennsylvania Railroad, Philadelphia, a 25-ton gantry crane for Philadelphia from the Whiting Corporation.

Craig Ridgeway & Son Co., Philadelphia, a 10-ton, 40-ft. span, 3-motor, overhead crane from Alfred Box & Co.

Carnegie Steel Co., Pittsburgh, three 10-ton and two 25-ton overhead cranes for the Homestead works, from the Alliance Machine Co.

Pittsburgh & Lake Erie Railroad, a 10-ton, 40-ft. span, 3-motor crane for outdoor service at Youngstown, Ohio, from Manning, Maxwell & Moore, Inc., Shaw Electric Crane Works.

Illinois Steel Co., Chicago, for Gary, Ind., a 75-ton overhead crane from the Morgan Engineering Co. and a 30-ton overhead crane from the Whiting Corporation.

Carnegie Steel Co., traveling tables for the new 28-32-in. structural mill at Homestead, Pa., divided between the Morgan Engineering Co. and the Alliance Machine Co.

Palombo Granite Construction Co., Quakertown, Pa., a 10-ton, 3-motor used Maris crane from T. B. MacCabe, Philadelphia.

The Mack International Motor Truck Corporation, 25 Broadway, New York, has acquired a two-story factory, 257 x 294 ft., at West Side, Fayette and Giles Avenues, Jersey City, N. J., for an assembling and distributing plant.

The Aeolian Co., Garwood, N. J., has awarded contract to the H. Wales Lines Co., 134 State Street, Meriden, Conn., for its four-story addition, estimated to cost \$200,000 with machinery.

The Methodist Book Concern, 150 Fifth Avenue, New York, contemplates the construction of a power house in connection with a proposed four-story printing and publishing plant at Dobbs Ferry, N. Y., estimated to cost in excess of \$500,000 complete. Visscher & Burley, 363 Lexington Avenue, are architects and engineers.

Kelley & Co., 780 Frelinghuysen Avenue, Newark, manufacturers of paper-makers' supplies, equipment, etc., are said to be planning the early rebuilding of the portion of their plant destroyed by fire March 4, with loss estimated at \$150,000 including equipment.

The Board of Education, Highland Park, N. J., is considering the installation of manual training equipment in its two-story and basement junior high school estimated to cost \$175,000. Alexander Merchant, New Brunswick, N. J., is architect.

The Garofano Construction Co., Inc., referred to last week as being in the market for a gasoline or steam-operated crane, is located in the First National Bank Building, Yonkers, N. Y., and not in New York City, as previously stated. The company is still inquiring for the equipment.

The Tohoe Electric Power Co., Ltd., Nagoya, Japan, is disposing of a bond issue in the United States for \$15,000,000, proceeds to be used for extensions in electrical generating plants and the purchase of equipment. This includes the completion of the steam operating electric power station now under construction at Nagoya with initial capacity of 35,000 kw., later to be developed to 105,000 kw. The Guarantee Trust Co., 140 Broadway, New York, is fiscal agent for the company.

Export Opportunity

B. D. Varma, manufacturers' representative at Lucknow, and with branches at Calcutta and Bombay, India, is interested in representing American manufacturers of various products on a commission basis. The items in which he is interested include tools of all kinds, builders' hardware, cranes, tanks, wire products, bolts and screws, sheets, tin plate, copper wire, machinery belting and various other products.

Philadelphia

PHILADELPHIA, March 23.

BIDS have been asked by the Cattle Brothers Corporation, 1712 North Ninth Street, Philadelphia, for a one-story addition to its galvanizing plant. Carson & Carson, 22 South Fifteenth Street, are architects.

The Philadelphia Grain Elevator Co., Pier B, Port Richmond, Philadelphia, has plans for a new elevator with capacity of 2,500,000 bu. estimated to cost \$3,500,000, including hoisting, conveying, loading and other machinery. Plans were drawn by the Fegles Construction Co., Minneapolis, Minn.

Shapiro & Small, Philadelphia, have leased a floor of

the building of the O'Brien Machinery Co., 113 North Third Street, for the establishment of a machine shop.

The Atlas Electric Co., 1218 Hamilton Street, Philadelphia, manufacturer of electrical equipment, has acquired property, 36 x 74 ft., at Green and Percy Streets, and will remodel two existing buildings for a new factory.

J. Frank Clark, 23 South Sixteenth Street, Philadelphia, architect, has completed plans for a two-story automobile service, repair and garage building, 94 x 135 ft., to cost \$85,000.

Grundy & Svenson, 4923 North Fifth Street, Philadelphia, manufacturers of metal and wood patterns, have filed plans for a one-story shop addition to cost about \$10,000.

The Philadelphia Tidewater Terminal, 10 Chestnut Street, Philadelphia, has leased 25 acres at the rear of its terminal, foot of Oregon Avenue, for the establishment of a new lumber storage and distributing terminal, to include the installation of loading and unloading machinery, conveying equipment and other apparatus, to cost \$500,000. Harvey C. Miller is president.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received the following inquiries: (43339) from Gabriel de la Torre Vacino, P. O. Box No. 11, Gibara, Cuba, desiring to get in touch with American manufacturers or exporters of wire fencing, galvanized iron sheets and plates, and kindred products; (43329) from Oscar Pischinger, Johannisstrasse 9-10, Hamburg-Wandsbeck, Germany, desiring to get in communication with American manufacturers of sugar-making machinery, chocolate-making machinery, confectioners' tools, bakers' tools and equipment; (43324) from L. Legros, 35 Pl. Victor Roosens, Merxem-Antwerp, Belgium, wishing to get in touch with American manufacturers of iron and steel products, metals, etc.; (43338) from Chr. Adamsen, Kongensgt. 13, Oslo, Norway, desiring to get in touch with American manufacturers of carborundum sharpening stones and grinding materials; (43349) from Maingard Freres Co., Ltd., Angles Rue de la Corderie & Sir William Newton, Port Louis, Mauritius, desiring to get in contact with American manufacturers of tools, automobile equipment and accessories; (43330) from Manuel Toro, Edificio del Banco de Colombia, Bogota, Colombia, desiring to get in touch with manufacturers of tools for railroad service, wheelbarrows, shovels, picks, motors and accessory apparatus; (43337) from R. K. Mukundji & Co., 20 Apollo Street, Bombay, India, wishing to get in touch with American manufacturers of machinery, electrical products, enamelware, etc.

The E. H. Freeman Electric Co., 803 East State Street, Trenton, N. J., has increased the size of its proposed factory at Monmouth and McKinley Streets, to five stories instead of two stories, 30 x 100 ft., and will ask bids soon. J. Osborne Hunt, Hunt Building, is architect.

The Counties Gas & Electric Co., Norristown, Pa., has plans for an addition to its gas generating works at West Conshohocken, Pa., with installation of a new unit rated at 2,500,000 cu. ft. per day, coal-handling equipment, fuel-oil storage and distributing apparatus, etc., estimated to cost \$400,000.

The Haverford Township School Board, Haverford, Pa., plans the installation of manual training equipment in its proposed two-story junior high school to cost \$225,000. Boyd, Abel & Gubert, Otis Building, Philadelphia, are architects.

Myer Brown, Scranton, Pa., is at the head of a project for the establishment of a furniture manufacturing plant

at Jermyn, Pa., and has acquired a local factory. It will be remodeled to give employment to about 200.

The Harrisburg Light & Power Co., Harrisburg, Pa., is planning extensions in its steam-operated electric generating station on Cedar Street, with the installation of a 10,000 hp. turbo-generator and accessory equipment. It will also install additional machinery at its power plant on Ninth Street. The work will be carried out in connection with a proposed expansion and betterment program to cost about \$600,000. E. G. Connette is president.

The Kulpmont Ice Co., Kulpmont, Pa., has plans for a one-story ice-manufacturing plant, 45 x 65 ft., to cost approximately \$45,000.

The Penn Central Light & Power Co., Altoona, Pa., has preliminary plans for an addition to its power house at Saxton, Pa., to cost \$200,000.

The Hazle Brook Coal Co., Hazleton, Pa., has acquired property at Aristes, and plans the construction of a coal breaker to cost more than \$90,000 with machinery.

The Board of Education, Shillington, Pa., contemplates the installation of manual training equipment in its proposed two-story and basement high school, estimated to cost \$110,000, for which bids will be asked at once on a general contract. Frederick A. Muhlenberg, Ganster Building, Reading, Pa., is architect.

The Blair Allen Coal Co., Conyngham, Pa., recently organized, has taken over the property of the Black Ridge Coal Co., and plans the installation of electric-operated machinery and other equipment.

The Monarch Machinery Co., 300 North Third Street, Philadelphia, is in the market for four No. 2B and three No. 3B double overhanging arm, Milwaukee plain milling machines.

The Alloy Metal Wire Co., Moore, Pa., is inquiring for an electric induction melting furnace, complete with a capacity of 500 lb. per heat.

New England

BOSTON, March 24.

INDICATIONS are that March machine-tool sales in this market will show no increase over February, which was one of the dullest months on record. Sales are still confined largely to a single tool here and there, usually at some sort of a concession. One local firm has just given a buyer of used tools extended credit, with a minimum first payment. The most important sales reported the past week were a tool-room lathe and a small milling machine, new, to the General Electric Co., Pittsfield, Mass.; a new shear to a local railroad, and two used milling machines and a three-spindle sensitive drill to a Boston shop.

A still further falling off in new inquiries is noted. The largest inquiry of the week was from a Massachusetts manufacturing concern for a 24-in. drill, a portable drill, rivet hammer, small wet tool grinder, beam saw, an air compressor and a moderate sized punch.

Plans are completed for a three-story, 54 x 75 ft., mill to be erected by the Cunningham Spice Co., Plymouth Road, Malden, Mass., for which motors, shafting and belting are required. William E. Cunningham is in charge.

The Gurney Heater Co., Framingham, Mass., has awarded contract for a one-story, 49 x 126 ft., machine-shop addition, and a 67 x 196 ft. platform. Lockwood, Greene & Co., 24 Federal Street, Boston, are the engineers in charge.

Foundations are in for a three-story and basement, 80 x 100 ft., junior high school to cost \$175,000 to be erected by the city of Marlboro, Mass. It will contain manual training and vocational departments. Charles M. Baker, 25 Arch Street, Boston, is the architect.

Plans are in progress for the Electric Storage Battery Co., 720 Beacon Street, Boston, for a one and two-story, 134 x 274 ft., plant on Ashford Street, Boston. Bigelow & Wadsworth, 3 Hamilton Place, Boston, are the architects.

The Atlas Body Works, 137 McKinley Avenue, Bridgeport, Conn., will build a two-story branch plant, 100 x 100 ft., at 136th Street and the Southern Boulevard, New York, with service and garage departments, estimated to cost \$50,000. Harry C. Koerner, 83 Fairfield Avenue, Bridgeport, is architect.

The Department of Water, Putnam, Conn., plans the purchase of electric-operated centrifugal pumping equipment with capacity of about 3,000,000 gal. per day for the municipal waterworks.

The Bennington Wax Paper Co., Bennington, Vt., has begun the erection of a one-story addition to cost \$100,000 with machinery.

The Board of Selectmen, Montague, Mass., is said to be considering plans for the construction of a municipal electric light and power plant to cost approximately \$50,000.

E. A. McDonald, 77 Summer Street, Boston, architect and engineer, has plans for a two-story automobile service, repair and garage building to cost \$100,000 with equipment.

Buffalo

BUFFALO, March 23.

THE Niagara, Lockport & Ontario Power Co., Buffalo, is disposing of a bond issue of \$15,000,000, a portion of the proceeds to be used for extensions and betterments in its hydroelectric power plants and system. Fred D. Corey is president.

The Seamon Container Co., Olean, N. Y., recently organized, will begin operations in a plant on Franklin Street for the manufacture of special paper containers. It is expected to provide equipment for the manufacture of paper boxes, the department to be ready early in May.

The Camillus Cutlery Co., Camillus, N. Y., has awarded a general contract to Thompson & Binger, 103 Park Avenue, New York, for a new one-story building. Adolph Kaster is in charge.

The Lamoka Electric Power Co., Corning, N. Y., is completing plans for the construction of a hydroelectric generating station at Lake Keuka, estimated to cost \$2,000,000 with machinery, transmission lines, etc. John Mills, Sodus, N. Y., is president, and Dr. G. F. Showers, Corning, secretary and treasurer.

The Fancher Furniture Co., Salamanca, N. Y., has work under way on a four-story addition to cost \$75,000.

Aeroplane manufacturing plants at Buffalo are arranging to increase production following the award of recent Government contracts. The Curtiss Aeroplane & Motor Co., Kall Street, has secured an order from the Army Air Service for 10 new type war airplanes at a cost of about \$250,000; the Consolidated Aircraft Corporation has taken a contract for the construction of 50 training airplanes and parts, totaling about \$500,000; and the Irving Airchute Co., 760 Main Street, will begin work on a contract with the British Government for parachutes, aggregating \$500,000.

The Peck Motor Sales Co., Hornell, N. Y., has filed plans for a two-story and basement addition to its garage and service station to cost \$100,000. Electrically operated equipment will be required, including a cylinder reborer machine, lathe, drill press, grinders, etc.

Detroit

DETROIT, March 23.

THE Kremer Metal Products Co., Chicago, manufacturer of motorless vacuum cleaners and kindred specialties, has leased a portion of the former plant of the Michigan Washing Machine Co., Muskegon Heights, Mich., and will remove to this location. Additional equipment will be installed.

The Board of Education, Dowagiac, Mich., contemplates the installation of manual training equipment in its proposed junior high school estimated to cost \$350,000, for which preliminary plans are being prepared by Billingham & Cobb, Press Building, Kalamazoo, Mich., architects and engineers.

The Ross Carrier Co., Benton Harbor, Mich., manufacturer of patented lumber trucks, conveyors, etc., is contemplating extensions in its plant. It recently increased its capital from \$100,000 to \$250,000.

The Grover Co., 428 East Jefferson Street, Detroit, manufacturer of pneumatic carriers, etc., has plans under way for a one-story addition, 30 x 100 ft. Halpin & Jewell, Hammond Building, are architects.

The Michigan Iron & Chemical Co., East Jordan, Mich., is arranging to rebuild the portion of its plant destroyed by fire March 6 with loss estimated at \$80,000 including equipment.

The Board of Education, Muskegon, Mich., has filed plans for the construction of a power house to be used in connection with a new local high school with manual training department. The complete project will cost \$640,000.

The Cawood-Paige Sales Co., 1119 Military Street, Port Huron, Mich., local representative for the Paige automobile, has awarded a general contract to Gustav Maas, 1513 Howard Street, for a two-story service, repair and garage

building, 70 x 100 ft. Walter H. Wyeth, Sperry Building, is architect.

The Hudson Motor Car Co., 12601 East Jefferson Street, Detroit, has awarded a general contract to the H. G. Christman Co., Stevens Building, for its proposed one and three-story and basement addition, 80 x 640 ft., primarily for assembling. Albert Kahn, Marquette Building, is architect.

A manual training department will be installed in the proposed Burton junior high school to be erected by the Board of Education, Grand Rapids, Mich., for which plans are under way. It is estimated to cost \$925,000 with equipment.

The Becker Auto Co., Grand Rapids, Mich., manufacturer of automobile equipment and accessories, has tentative plans for a new factory to cost approximately \$110,000 with equipment.

The Wolverine Brass Mfg. Co., Grand Rapids, Mich., is planning the erection of a one-story power house.

Cincinnati

CINCINNATI, March 23.

IMPROVEMENT was noticeable in the local machine-tool market the past week. A number of good orders were placed with manufacturers and inquiries were more numerous than the previous week. Production is going along at a fair rate and machine-tool builders feel that there is good business ahead. Dealers state conditions are fair with the market rather quiet. Manufacturers of small tools report a good demand for their products. Orders for used machinery have been moderate. Several used planers were sold the past week.

Sales of lathes were encouraging. The Niles Tool Works sold a 27-in. new model time-saver lathe to an Evansville, Ind., manufacturer. Several turret lathes were disposed of by a local manufacturer. Other orders for lathes indicate that conditions are getting better. Planer manufacturers report good sales. The Cincinnati Planer Co. received an order from Philadelphia for a 42-in. planer. Upright and radial drills are selling fairly well. A good volume of business has been booked the past 10 days by local builders of milling machines and several good orders have been received for boring mills. Electric tool houses state that operations are somewhat restricted because of the limited number of sales. The outlook, however, is for increased production.

The Accurate Gear Co., Springfield, Ohio, has been incorporated to manufacture fly-wheel starter gears for automobiles and other machinery. The capitalization is \$50,000 and the incorporators are E. S. Houck, E. C. Price, Clark R. Crabill, Ralph B. Miller and Stanley Kauffman. Quarters have been established in the Greenwalt Factories Building, North Center Street, and operations will begin about April 1. Stanley Kauffman is general manager.

The Master Electric Co., Dayton, Ohio, manufacturer of electric motors, has purchased a three-story concrete factory and four auxiliary buildings at Linden Avenue and the Pennsylvania Railroad, giving the company 60,000 sq. ft. of floor space. E. P. Larsh is president.

The Kodak Radio Corporation, Cincinnati, manufacturer of radio sets and accessories, has purchased a six-story building on East Pearl Street, which will give it 40,000 sq. ft. of manufacturing space. Clarence E. Ogden is president of the company.

The Chesapeake & Ohio Railroad Co. will shortly begin the construction of a new engine terminal at Russell, Ky., to cost \$1,108,450.

The Carlyle-Labold Brick Co., Ironton, Ohio, is making improvements at its plant at Coal Grove, Ohio. A steel tramway is being erected from the river bank to the clay mines.

The Elkhorn Collieries Co., Bastin, Ky., suffered a loss estimated at \$125,000 on March 19 when its tipple and power house, including equipment, were destroyed by fire.

The Hobart Brothers Co., manufacturer of battery charging equipment, air compressors and auto buffers, Troy, Ohio, is erecting a three-story factory and office building, 125 ft. square to cost approximately \$50,000.

The Jordan Mfg. Co., Monticello, Ga., C. H. Jordan, president, is planning the erection of a new factory at Johnson City, Tenn., for the manufacture of bobbins and other textile mill equipment.

The L. J. Breed Equipment Co., James Building, Chatta-

nooga, Tenn., has inquiries out for 20 dump cars, 36-in. gage, 4-yd. capacity.

The Tennessee Eastern Electric Co., Johnson City, Tenn., is said to be arranging an expansion program to cost about \$500,000, including additions in power plants and the installation of equipment.

The Tennessee Machinery Exchange, P. O. Box 1094, Knoxville, Tenn., has inquiries out for an automatic knife grinder, 36 to 30 in., one horizontal return tubular boiler, 80 to 100 hp., complete with fittings and stack, and one 125-hp. Corliss or slide valve engine with accessories.

The Tennessee-Colorado Marble Co., Knoxville, Tenn., has plans for a one-story marble-cutting, grinding and polishing works, 180 x 200 ft., to cost about \$40,000 with equipment. Manley & Young, 814 West Hill Avenue, are architects.

The Vogt Refrigerator Co., Louisville, contemplates the erection of a one-story plant at 616 Barrett Avenue to cost about \$25,000 with equipment.

The Memphis Furniture Mfg. Co., 715 South Camilla Street, Memphis, Tenn., has awarded a general contract to F. J. Ozanne & Co., Madison Avenue Building, for a three-story plant to cost \$130,000 complete. About \$75,000 has been appropriated for equipment, for which orders are being placed. F. B. Whitaker is secretary.

St. Louis

ST. LOUIS, March 23.

PLANS are being arranged by the Board of Public Service, City, Hall, St. Louis, for a one-story manual training shop at the Bellefontaine industrial farm, to cost about \$50,000 with equipment. It will be erected by day labor. L. R. Bowen and H. Updike, City Hall, are engineers.

The Kansas Flour Mills Co., Postal Telegraph Building, Kansas City, Mo., is having plans drawn for a new elevator at Enterprise, Kan., consisting of storage tanks, bins, conveying and hoisting equipment, and mechanical shop, to cost close to \$100,000. The plant will have a capacity of 250,000 bu. Horner & Wyatt, Board of Trade Building, Kansas City, are engineers.

The Rockwell-Barnes Paper Co., Third and Locust Streets, St. Louis, is arranging to rebuild the portion of its plant recently destroyed by fire with loss estimated at \$75,000.

The Southern Plating Works, Inc., 805 Broadway, Little Rock, Ark., is planning for extensions and the installation of additional equipment. J. E. Goetschius is general manager.

The Department of Water, City Hall, St. Louis, plans the installation of four 500-hp. boilers and auxiliary equipment in the power house at the Bissell's Point waterworks pumping station, replacing present worn-out apparatus. E. E. Wall is commissioner.

The Grip Tight Curtain Rod & Metal Co., Inc., 412-14 South Seventh Street, St. Louis, manufacturer of curtain rods, metal tubing, etc., plans to rebuild the portion of its factory destroyed by fire March 17. An official estimate of loss has not been announced.

The Jefferson Compress Co., 620 West Second Street, Pine Bluff, Ark., will erect a new cotton compressing plant, to cost about \$35,000 with machinery. H. R. Henes is head.

The City Council, Lawton, Okla., plans the installation of electric-operated pumping equipment in connection with a proposed filtration plant and waterworks betterments, estimated to cost \$180,000. H. G. Olmsted, 2230 West Eighteenth Street, Oklahoma City, Okla., is engineer.

The Air Reduction Sales Co., 342 Madison Avenue, New York, has begun the construction of its plant at Packard and Powell Streets, Kansas City, Kan., for the manufacture of acetylene welding apparatus, commercial oxygen, etc., with generator house, boiler plant and other departments, estimated to cost \$75,000.

The Board of Education, Kansas City, Mo., plans the installation of manual training equipment in its new Southwest senior high school to cost about \$375,000, for which foundations will be laid immediately. C. A. Smith, Finance Building, is architect.

The City Council, Ponca City, Okla., will purchase equipment for a municipal electric light and power station, including Diesel oil engine-generator set and accessories. Motor-driven pumping machinery for waterworks will also be required.

The St. Louis Forgings Co., Twenty-first Street and Southern Avenue, East St. Louis, Ill., has plans for a one-story building, 100 x 100 ft., estimated to cost \$35,000. P. R. Aldrin is general manager.

Milwaukee

MILWAUKEE, March 23.

INDUSTRIAL activity with respect to the foundry and machine shop trade in Milwaukee and vicinity is expanding steadily, and projects being undertaken or contemplated show excellent prospects. Current sales continue light, but business in March is showing a considerable increase over either January or February. While at the beginning of this month the number of employees was slightly less than the month before, the call for skilled workmen in the metal-trades continues in excess of applications. There is, however, a surplus of common labor.

The Smith Engineering Works, Milwaukee, manufacturer of rock, ore and gravel handling machinery, has acquired a site for a new plant at Lake Boulevard and Holton Street, and will begin construction immediately on the first unit, a foundry and machine shop, 200 x 250 ft., one story, of steel and brick. The Worden-Allen Co., Milwaukee, has been awarded the general contract. When the new plant is completed, the present shops at 1154 Thirty-second Street, will be abandoned. Charles F. Smith is president and treasurer; Irving R. Smith, president Sterling Wheelbarrow Co., is vice-president, and Harold E. Smith, president T. L. Smith Co., concrete mixers, is secretary.

The Industrial Controller Co., Milwaukee, manufacturer of electric controlling devices, has acquired the three-story plant, 100 x 140 ft., of the Riverside Printing Co., at Hanover and South Pierce Streets, and will convert it into a machine shop, eventually adding the four stories provided in the original design. As noted last week, the Industrial company is abandoning its shop at 886 Greenbush Street, which it has outgrown. The acquisition of the Riverside plant cost in excess of \$150,000, and with additional machinery now being purchased, the investment will probably run to \$225,000 or more. Charles Gale Welch is president, and Frank W. Magin, secretary.

The Ajax Motors Co., Racine, Wis., affiliated with the Nash Motors Co., Kenosha and Milwaukee, is preparing to enter active production of automobiles and has placed contracts for materials and parts with nine Racine industries. Equipment is being installed in the Ajax plant, formerly occupied by the old Mitchell Motors Co. Orders for tools and other machinery are still being placed, but the bulk of the equipment is now being made up and delivered. David M. Averill is vice-president and general manager.

The Manitowoc, Wis., Common Council is asking for tenders on the complete work of designing and executing a plan whereby the municipal waterworks plant will deliver a minimum of 3,000,000 gal. daily. Bids close April 3 in the office of Arthur H. Zander, city clerk.

The city of Stoughton, Wis., at a special election March 16 voted in favor of issuing \$100,000 in municipal bonds for the acquisition of the local plant of the old Moline Plow Co., valued at \$500,000 in the appraisal in recent litigation incident to the Moline reorganization. The plant has been idle three years. It is to be offered in whole or in part to outside industries, while the steam generating capacity is to be added to the municipal light and power plant. This will require some replacements and new installations.

The R. H. Thieman Co., 816 Niagara Avenue, Sheboygan, Wis., Ford dealer, is awarding contracts March 21-23 for its new \$125,000 headquarters building, 100 x 102 ft., three stories and half basement, on North Eighth, near Ontario Avenue. The architect is W. C. Weeks, Sheboygan.

The Milwaukee Grey Iron Foundry Co., Milwaukee, is placing contracts for a one-story brick and concrete addition, 45 x 102 ft., to its shop at Mitchell Street and Thirty-ninth Avenue. Edwin Wieland is treasurer and general manager.

The New Era Combustion Turbine Engine Co., Milwaukee, has been organized with \$35,000 capital stock by John B. Drahonovsky and associates to develop the manufacture of a new type of power unit for vehicles. An experimental shop has been opened and will be further enlarged at 755 Montana Avenue.

Cleveland

CLEVELAND, March 23.

THE improved demand for machine tools noted last week is holding up, although buying is confined largely to single machines. The demand from Detroit has become more active. A Cleveland distributor received orders from that city during the week for eight lathes and three shapers. This was

scattered business, only a part of it coming from the automotive industry. A local manufacturer received an order for two large turret lathes from a plant in Louisiana for axle work. Akron rubber companies are still adding to their machine tool equipment. Inquiries for single machines in small lots are fairly plentiful. Used machinery is in good demand and dealers report that the supply of large planing and boring machines and plain and universal milling machines in modern types and in good condition is not large.

In heavy handling equipment the Wellman-Seaver-Morgan Co., Cleveland, has taken an order from the New York Central Railroad for an electrically operated car dumper for erection on the Toledo & Ohio Central docks at Toledo. It also booked an order from the Cleveland Electric Illuminating Co. for a 60 ft. revolving car dumper to be erected at its new power plant at Avon, Ohio.

The American Sheet & Tin Plate Co., New Philadelphia, Ohio, will erect a new power house at its local mill, to include the installation of boilers, 300-kw. generator and accessory equipment.

The Austin Co., Cleveland, has taken a contract to design and erect a machine shop and office building for the G. A. Gray Co., Cincinnati, builder of machine tools. The shop will be one-story, 210 x 420 ft. and the office building two stories, 35 x 80 ft.

The Toledo-Edison Co., Toledo, Ohio, has placed the general contract for a power plant addition. The equipment required includes turbines, generators, cranes, switch-boards and coal and ash handling equipment.

The Postoffice Department has placed the general contract with the Spaulding Construction Co., New York, for three airplane hangars and service buildings to be erected at Brookpark, Ohio, in the outskirts of Cleveland. A 5,000,000 candle power beacon light will be provided to be located on a 50 ft. tower.

Contracts have been placed or are pending for the following schools in which manual training equipment will be installed: Junior high school, Gallon, Ohio, E. W. Nichols, clerk of the Board of Education; senior high school, Columbus, Ohio, E. L. McCune, clerk of the Board of Education; high school, Batesville, Ohio, J. W. Beard, clerk of the Board of Education; high and grade school, Unionville Center, W. A. Pickett, clerk of the Board of Education; high and grade school, Manchester, Ohio, E. T. Cochran, president of the Board of Education.

Fire, March 15, destroyed the plant and equipment of the Union Seamless Tube Co., Bellevue, Ohio, manufacturer of automobile parts, with a loss of \$35,000. Several thousand dollars' worth of new equipment had been installed within the past two months, all of which was destroyed or seriously damaged. Plans for rebuilding are under consideration.

Chicago

CHICAGO, March 23.

AS March progresses the inflow of miscellaneous orders for individual machines is diminishing and the market is again becoming depressingly quiet. The largest transaction of the week was the purchase of 19 turret lathes of various sizes by the Nash Motors Co. The same buyer placed orders for three additional spindles of high-speed ball bearing drills. The Pettibone-Mulliken Co., Chicago, has closed for a No. 4 plain milling machine. The Advance-Rumely Co., Laporte, Ind., bought a 30-in. turret lathe.

The Atchison, Topeka & Santa Fe has put out additional inquiries, including a 36 x 36-in. x 14 ft. planer, a 4 ft. radial drill, a 5 ft. radial drill, two 2 in. Landis, or equivalent, double head bolt cutters, one Ryerson, or equivalent, pneumatic flue swedging machine of the single cylinder type to operate on 80 lb. air pressure, one Oster No. 300-A, or equivalent, pipe threading machine. The Northern Pacific has entered the market for a 48 in. car wheel borer, a No. 12 Atkins, or equivalent, quick cut saw, a combination arbor and straightening press, and a No. 5 Oliver, or equivalent, drill pointer. The Burlington is expected to issue an extensive list in about two weeks.

John Michels, 1112 North California Avenue, Chicago, is taking bids on a one-story brass foundry, 30 x 75 ft., at North Mango and Grand Avenues to cost \$7,500.

The Mack International Motor Truck Co., 1808 South Michigan Avenue, Chicago, has had plans prepared for a one and two-story automobile service station, 266 x 460 ft., at Wentworth Avenue and Thirty-third Street.

The John B. Wiggins Co., 1104 South Wabash Avenue, Chicago, has awarded a contract for a one-story engraving plant, at Fullerton Avenue, to cost \$45,000.

The Premier Electric Co., 1800 Grace Street, Chicago, has awarded contract for a third-story addition, 66 x 125 ft., to cost \$20,000.

The Janows & Kramer Co., 1645 Carroll Avenue, Chicago, has awarded contracts for a two-story addition, 92 x 124 ft., to cost \$40,000.

The Chicago Metal Specialties Co., 1513 West Madison Street, Chicago, has awarded a contract for a one-story shop, 59 x 100 ft., at 320-24 Union Park Street to cost \$8,000.

Lionel Vallas, 2855 West Lake Street, Chicago, will erect a one-story sheet metal shop, 50 x 100 ft., to cost \$10,000.

The Phoell Mfg. Co., 5700 West Roosevelt Road, Chicago, manufacturer of screws, has awarded contract for a one-story addition, 55 x 235 ft., to cost \$20,000.

The K. & S. Mfg. Co., manufacturer of automobile steering apparatus, has had plans prepared by J. J. Novy, 2434 South Ridgeway Avenue, Chicago, for a one-story factory, 100 x 125 ft., at Forty-seventh Avenue and Fifteenth Street, Cicero, Ill., to cost \$45,000. Lewis J. Kuckl, president of the K. & S. company, is also president of the Ed Hansen Furniture Co., 1315 West Twenty-first Place, Chicago.

The machine shop of the automobile accessories plant of the Waller Mfg. Co., East Dubuque, Ill., was recently damaged by fire, the loss being estimated at \$40,000.

The city of New London, Wis., is installing a machine shop to do repair work for municipal departments.

The Beardsley & Piper Co., manufacturer of molding machines, 2541 North Keeler Avenue, Chicago, has purchased 93,000 sq. ft. of land in the Healy industrial district, adjoining a recent purchase, and in the fall will erect buildings with 30,000,000 sq. ft. of floor space.

The Queen City Foundry, Sioux Falls, S. D., contemplates the erection of an addition.

The Yale Electric Corporation, 1603 South Michigan Avenue, Chicago, has leased from the Ford Roofing Products Co. the three-story and basement plant at 2339-41 South LaSalle Street, comprising 23,500 sq. ft. of floor space.

The Janows & Kramer Range Co., 1637 Carroll Avenue, Chicago, has plans for a two-story and basement addition, 90 x 125 ft., to cost about \$75,000. George N. Leland, 6815 Indiana Avenue, is architect and engineer.

The Federal Ice & Refrigerator Co., Kankekee, Ill., a subsidiary of the City Ice & Fuel Co., 6611 Euclid Avenue, Cleveland, has revised plans for a local ice-manufacturing plant to cost \$300,000 with equipment. Charles C. Coneby is company engineer, Cleveland office.

The Sioux City Gas & Electric Co., Sioux City, Iowa, will proceed with the construction of its proposed steam-operated electric power plant, estimated to cost \$1,500,000 with equipment. The project will include a machine shop.

The Board of Education, Creston, Iowa, plans the installation of manual training equipment in a proposed two and three-story high school to cost \$275,000, for which bids have been asked on a general contract. Keffers & Jones, Masonic Temple Building, Des Moines, Iowa, are architects.

The Board of Municipal Works, Winona, Minn., will receive bids until April 8 for an air-lift pumping plant, air compressors and other equipment for waterworks extensions. Alvord, Burdick & Howson, 8 South Dearborn Street, Chicago, are engineers.

Pittsburgh

PITTSBURGH, March 23.

MACHINE-tool business in this district is somewhat spotty, but averages a little better than recently. The Westinghouse Electric & Mfg. Co., the Pittsburgh Railways Co., the National Tube Co. and the Oil Well Supply Co. appear among the purchasers of tools the past week. Two large boring mills were bought by the Westinghouse company, while the Pittsburgh Railways Co. bought three lathes, an axle lathe, a radial drill and several hacksaws. Machine-tool business still is better in a prospective than in an actual way. Many seeking standard tools are scanning the used machinery lists.

The Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, has plans for an additional unit to its Creighton, Pa., plants.

The Erie Railroad Co., 50 Church Street, New York, is said to have tentative plans under advisement for the erection of an addition to its engine house, with shop facilities, at Meadville, Pa.

The Eastern Sewer Pipe & Brick Co., Martinsburg, W. Va., will erect a new plant for the manufacture of vitrified sewer pipe, brick, etc., to cost approximately \$85,000. Machinery will be installed for an output of 100,000 brick per day. F. Vernon Aler is president.

The Guyan Machine Shops, Logan, W. Va., machinery dealers, have inquiries out for hack saws, about 20-in. blades, suited to motor drive; a tire press for solid truck tires, about 250 tons capacity, and a 5-hp. motor, three-phase, 60-cycle, 220 volts.

The General Electric Co., East Lake Road, Erie, Pa., has awarded a general contract to J. C. Hammond, 224 Lincoln Avenue, for a one-story addition, 100 x 220 ft., to cost \$55,000, to be equipped primarily for woodworking. H. E. Bailey is company engineer.

The Island Creek Coal Co., Huntington, W. Va., will soon begin the construction of a new all-steel tippie, to cost in excess of \$75,000 with equipment.

W. S. Haddock, P. O. Box 4, Moundsville, W. Va., is planning to purchase pumping equipment for an artesian well.

The American Coal Co., Welch, W. Va., is completing plans for the erection of a new steel tippie at its Pinnacle properties in Mercer County, to cost approximately \$50,000 with machinery.

Lee & Watts, Union City, Pa., have plans for a two-story and basement garage and service station, to cost \$40,000. A lathe, cylinder reboring machine, drill press and some conveying equipment will be required.

Gulf States

BIRMINGHAM, March 23.

ENLARGEMENTS are being considered by the Houston Structural Steel Co., Center and Yale Streets, Houston, Tex., to include a one-story addition to steel fabricating works, 60 x 100 ft.; one-story addition to main mill, 62 x 100 ft.; and one-story structure, 80 x 325 ft., for the manufacture of corrugated steel and other metal roofing. An electric traveling crane will be installed in connection with other equipment. The work is estimated to cost \$100,000.

The Phillips high school, Birmingham, will be equipped with a motor-driven machine shop and the following machines are to be purchased: Six lathes, one shaper, two millers, universal and plain, one wet tool grinder, one hack saw, one planer, one radial drill and one upright drill. An appropriation of \$15,000 has been set aside. Literature relating to this equipment should be sent to R. F. Jarvis, director, vocational education department, Birmingham Public Schools. The purchases will be made by D. E. McKinley, business manager.

The Texas & Pacific Railroad Co., Texas & Pacific Building, Dallas, Tex., is rebuilding the portion of its car repair shops at Marshall, Tex., recently destroyed by fire with loss of \$100,000. Additional equipment will be installed. E. F. Mitchell is chief engineer.

The United States-Engineer, Jacksonville, Fla., is asking bids until April 12 for one two-cylinder engine and one hoisting engine, circular 76.

The Reed Lumber Co., Centreville, Miss., will purchase an engine, boiler and other power equipment for a new saw mill, also planing machines and other woodworking equipment, slab conveyors, pumps, mechanical fan, etc.

George M. Milan and William D. Seymour, 4432 Carondelet Street, New Orleans, are considering plans for a new ice-manufacturing plant on Gentilly Avenue, with initial daily capacity of 70 tons, estimated to cost \$115,000 with machinery. It is purposed to organize a company to operate the plant.

The City Council, Houston, Tex., has called a special election on April 7 to approve a bond issue of \$750,000, the fund to be used for waterworks extensions and betterments, including the installation of two pumping plants. J. C. McVea is city engineer.

E. M. Carter and W. P. Allen, Terrell, Tex., are planning for the construction of a cottonseed oil mill in the vicinity of Plainview, Tex., to cost about \$125,000 with machinery. It is purposed to organize a company to operate the plant.

The Board of Directors, Methodist Orphans' Home, 619 Herring Avenue, Waco, Tex., plans the installation of a machine shop at the institution. It is also purposed to build an automobile service and repair works. Milton W.

Scott, 412½ Franklin Avenue, is architect. W. F. Barnett is manager.

The Texas Willite Road Construction Co., Houston, Tex., is in the market for a number of dump cars, Koppel type, and a quantity of section track, 30-in. gage.

The Natchez & Southern Railway Co., Natchez, Miss., is said to be planning the construction of a local machine shop, engine house and other structures for locomotive repairs. A 30,000-gal. steel water tank will also be built. O. O. Ogden is vice-president and general manager.

The Common Council, Dilley, Tex., plans the installation of motor-driven pumping machinery, 200 gal. per min. capacity, and accessory apparatus, in connection with waterworks extensions. The Terrell-Bartlett Engineers, Inc., San Antonio, Tex., is engineer.

The Wheatley Oil Co., Mirando City, Tex., has tentative plans for the construction of an oil refinery, estimated to cost \$225,000.

The Coral Gables Ice Co., Miami, Fla., has tentative plans for the construction of a new unit estimated to cost \$50,000 with machinery. George O. Haskell is president.

Ovens, power equipment, conveying and other machinery will be installed in the two-story addition to be erected at the plant of the Campbell-Stone Baking Co., McKinney Avenue and Thomas Street, North Dallas, Tex., estimated to cost \$55,000 with equipment. It is purposed to double the present capacity. Lang & Wittchell, Dallas, are architects.

The Common Council, Donna, Tex., has arranged a fund of \$50,000 for waterworks extensions and betterments, to include the installation of pumping machinery and accessory equipment, with steel tank on tower. H. J. Wilson, San Juan, Tex., is engineer.

W. M. Smith & Co., First Avenue, Birmingham, have inquiries out for a marine railroad, with rolling stock, etc.

The Reeves Mfg. Co., Greenville, Tex., will build an addition to its ice-manufacturing and refrigerating plant to more than double the present capacity. The cost is estimated at \$50,000.

The Burton-Swartz Cypress Co., Perry, Fla., is in the market for 50 to 100 heavy section used channels, 20 to 22 in.

South Atlantic States

BALTIMORE, March 23.

THE Williamson Brothers Veneer Co., Texas, Md., has tentative plans for rebuilding the portion of its mill destroyed by fire March 16 with loss approximating \$150,000 including machinery.

The Board of Awards, Baltimore, is arranging for the early construction of a one-story repair shop at Key Highway and Webster Street, for the Fire Department, estimated to cost \$35,000 with equipment. Steuart Purcell is engineer.

The Bureau of Yards and Docks, Navy Department, Washington, will soon ask bids for four 300-hp. water-tube boilers for the power house at the local naval hospital, with mechanical stokers, and one each turbine-driven and motor-driven forced draft fans, specification 5082.

The Albemarle Paper Co., Tredegar Street, Richmond, Va., has plans for a four-story addition to cost about \$200,000 including equipment.

The J. G. Skelton Co., Inc., Railway and Power Building, Richmond, Va., has inquiries out for a motor-driven traveling crane, 5 to 7 tons capacity, 30 to 50-ft. span.

The purchasing agent, Government Printing Office, Washington, is asking bids until April 10 for two air compressors, each with capacity of 400 cu. ft., as per specifications.

The Greenville Steel & Foundry Co., Grace and North Markley Streets, Greenville, S. C., manufacturer of machine parts, castings, etc., is considering plans for enlargements, and the installation of additional equipment.

The Board of Town Commissioners, Apex, N. C., will take bids until April 15 for motor-driven centrifugal pumps and accessories, steel water tanks and towers and other equipment for a proposed municipal waterworks. The Gilbert C. White Co., Durham, N. C., is engineer.

The North State Lumber Co., P. O. Box 464, Charleston, S. C., is in the market for a Mogul or Prairie type locomotive, 36-in. gage, 12 x 13 in., or 12 x 16 in.

W. A. Catshaw, Elba, Ala., and associates have acquired a site at Dublin, Ga., and plan the erection of a new factory for the manufacture of shuttles and other cotton mill equipment, estimated to cost \$25,000.

The Board of Education, Baltimore, plans the construction of a manual training shop in connection with a pro-

posed junior high school to cost about \$600,000 in the vicinity of Warren Avenue and Hamburg Street.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until April 7 for wire rope for various navy yards, schedule 3468; for 36,000 lb. slab zinc for Mare Island, schedule 3845, and 5000 lb. sheet copper, schedule 3476; one grinding machine for Puget Sound, schedule 3469; until March 31 for 56 counter balance springs for the Washington yard, schedule 3465; conductor cable, power wire and lead-covered cable for various yards, schedule 3477; for cups, grease, oil and priming and relief valves for the Hampton Roads yard, schedule 3484.

The Cascade Light & Power Co., Brevard, N. C., is planning for enlargements in its power plant and the installation of additional equipment.

The Commissioners of Public Works, Spartanburg, S. C., are asking bids until April 14 for a power house, with electric generators, turbines and pumping machinery, steel standpipe and accessory equipment for a proposed municipal waterworks; also for a complete water purification plant of 6,000,000 gal. capacity. P. H. Norcross, Atlanta, Ga., is consulting engineer.

The Stuart A. Johnson Engineering Co., Realty Building, Savannah, Ga., has inquiries out for a 200-hp. return tubular boiler, 125 lb. working pressure, with fittings.

S. H. Browning, 211 Clifton Road, Atlanta, Ga., has awarded a general contract to G. H. Bray, Candler Annex, for a one-story machine shop and electrical works, 50 x 78 ft., to cost \$23,000.

The Logan-Long Co., Franklin, Ohio, manufacturer of roofing products, has work in progress on an initial unit for a new plant at Oakland City, Atlanta, Ga., where a 7-acre tract recently was purchased. It will be 100 x 400 ft., estimated to cost approximately \$275,000 with equipment.

The director of purchases and sales, Department of Agriculture, Washington, is asking bids until March 31 for refrigerating equipment.

The Carolina Motor & Machine Co., Henderson, N. C., has inquiries out for a steam-driven hydraulic pump.

W. A. King, Waynesboro, Va., is planning to purchase a jaw crusher, elevator and screen, with capacity of about 100 tons of rock per day.

The Hackley Morrison Co., Inc., 1708 Lewis Street, Richmond, Va., has inquiries out for an 18-ton switching locomotive, 40-in. gage, with tender or saddle tank.

The general purchasing officer, Panama Canal, Washington, will receive bids until April 10 for machine shop equipment, steel rope, steel pipe runners and shafts, pipe fittings, staybolt iron, steel drums, bolts and spikes, gasoline pump, fire brick, steam traps, etc., circular 1661.

George D. Brewer & Co., Inc., 6 North Bloodworth Street, Raleigh, N. C., is planning to purchase machinery for the manufacture of small paper boxes. George D. Brewer is president.

Indiana

INDIANAPOLIS, March 23.

CONTRACT has been awarded by the Board of Public Works, Indianapolis, to the J. G. Karstedt Construction Co. for a municipal automobile service, repair and garage building, 100 x 150 ft., to cost \$100,000 with equipment.

The Board of Education, Greencastle, Ind., has plans for a two-story vocational building at the high school to cost about \$85,000. A portion of the structure will be used as a gymnasium. McGuire & Shook, Indiana Pythian Building, Indianapolis, are architects.

The Standard Oil Co. of Indiana, Indianapolis, is arranging for a new oil storage and distributing plant at Whiting, Ind., consisting of several buildings, tanks, pumping equipment, etc., estimated to cost \$1,000,000.

The Liberty Township Board of Education, North Liberty, Ind., is considering the installation of manual training equipment in its two-story high school estimated to cost \$110,000. Freyermuth & Maurer, Associates Building, South Bend, Ind., are architects.

The City Council, Anderson, Ind., will purchase a vertical turbine pump, motor-driven, with capacity of about 700 gal. per min., and accessory equipment, in connection with a new well to be driven. Bids are being asked until April 6. R. L. Cresson is city clerk.

The Terre Haute, Indianapolis & Eastern Traction Co., Terre Haute, Ind., has preliminary plans for rebuilding its cars barns and shops recently destroyed by fire with loss of \$80,000. The Shourda-Stoner Co., Tribune Building, is architect.

Electric power equipment, conveying, elevating and other machinery will be installed in the two-story and basement

printing plant, 100 x 150 ft., to be erected by the News Publishing Co., Fort Wayne, Ind., estimated to cost \$300,000. Meade & Hamilton, Garfield Building, Cleveland, Ohio, are architects.

The Geneva Water Co., Geneva, Ind., plans the installation of pumping equipment in connection with a proposed water system estimated to cost \$40,000. Cole, Asire & Moore, J. M. S. Building, South Bend, Ind., are architects.

The Board of Education, Frankfort, Ind., plans the installation of manual training equipment in its proposed high school estimated to cost \$100,000. Rodney Leonard, Peoples' Life Building, is architect.

The Turner Mfg. Co., manufacturer of automobile accessories, Kokomo, Ind., will erect a new plant containing 15,000 sq. ft. of floor space, to cost \$40,000.

Contracts have been let by the Muncie Malleable Foundry Co., Muncie, Ind., for the reconstruction of its plants recently partly destroyed by fire. It is hoped to have the first furnace in operation in 45 days.

Pacific Coast

SAN FRANCISCO, March 18.

PLANs are being considered by the Santa Fe Railway Co., Kerckhoff Building, Los Angeles, for a three-story building, 50 x 275 ft., at repair shops at San Bernardino, Cal., to cost about \$160,000. The engineering department is in charge.

The Solon & Schemmel Tile Co., Fourth and Carrie Streets, San Jose, Cal., is building a new plant on the Monterey Road, near McClellan Avenue, to cost approximately \$30,000.

The Beverly Hills Ice Co., Beverly Hills, Los Angeles, will erect a one-story ice-manufacturing plant, 82 x 170 ft., for which plans have been completed by John M. Cooper, Marsh-Strong Building, Los Angeles, architect.

The Banner Refining Co., Third Street, San Francisco, is planning to rebuild its oil storage and distributing plant at Minnesota and Twentieth Streets recently destroyed by fire with loss estimated at \$200,000 including equipment.

The Inland Empire Paper Co., Spokane, Wash., will erect a two-story unit at its mill at Millwood, Wash., to be 145 x 225 ft., estimated to cost \$200,000 with equipment.

The Triumph Steel Co., Reno, Nev., is contemplating the early construction of a new plant on the Trumbull property at Aptos, near Santa Cruz, Cal., and will establish offices at San Francisco.

The Olympia Motors Co., State and Cherry Streets, Olympia, Wash., has plans for a two-story service, repair and garage building, 115 x 120 ft., to cost about \$75,000 with equipment. Joseph Wohleb, 206 Chambers Building, is architect.

The City Council, Eugene, Ore., plans the installation of pumping equipment in connection with proposed extensions in the municipal waterworks. Stevens & Koon, Spalding Building, Portland, Ore., are consulting engineers.

The Perfect Caster Mfg. Co., 3517 East Eleventh Street, Long Beach, Cal., has awarded contract to H. R. Bradley, 1350 Coronado Avenue, for a two-story factory, 50 x 72 ft.

The City Council, Mesa, Ariz., plans extensions in the municipal electric light and power plant to cost about \$37,000.

Canada

TORONTO, March 23.

MACHINE-tool sales in this market fell off slightly the past week. More interest, however, is being shown in inquiries and several good prospects are shaping up which are expected to develop into orders within the next few weeks. Recent buying has been almost entirely for replacement purposes. The general outlook is brighter than a year ago and selling agents and builders are optimistic regarding the future.

The Town Council, Leamington, Ont., will shortly ask for bids on two centrifugal pumps, motors, pump house, etc., in connection with a waterworks system.

The London, Ont., Utilities Commission, is having plans prepared for addition to the waterworks plant to cost \$100,000. E. V. Buchanan is manager.

Mimico, Ont., proposes to build a pumping station there to cost \$125,000. The proposition has been passed by the Town Council and will be referred to the Railway Board.

The S.K.F. Co., Toronto, contemplates the erection of a manufacturing plant on Bay Street. It manufactures ball bearings, etc.

The Dominion Gas & Fuel Co. contemplates building a plant at Oakville, Ont., to cost \$300,000.

Daigle & Paul, Ltd., Verdun, Que., has the contract for millwork in connection with a \$2,000,000 paper mill to be erected for Price Brothers, Ltd., at St. Joseph D'Alma, Que. William I. Bishop, Ltd., Montreal, is the general contractor.

The City Clerk, S. H. Kent, Hamilton, Ont., is receiving bids for the supply and erection of one 15-hp., and 3-hp., vertical induction motors; switchboard, conduits, etc., for the Strachan Avenue sewage pumping station. W. L. McFaul is city engineer.

The Hydro Commission, Hamilton, Ont., will build a substation and garage on Hughson Street, North, to cost \$200,000.

The Harris Abattoir Co., Toronto, has awarded the general contract to the James McDiarmid Co., Ltd., and the steel contract to the Vulcan Iron Works, both of Winnipeg, Man., in connection with new \$400,000 packing plant to be erected at St. Boniface, Man. Equipment contracts which will total about \$500,000 will be awarded later.

Trade Changes

Offices and salesroom of the Columbus Railway, Power & Light Co., Columbus, Ohio, have been moved from 102 North Third Street to 215 North Front Street. The building at the latter location was purchased by the company several months ago and has been extensively remodeled.

The Gibb Welding Machines Co., successor to Gibb Instrument Co., Bay City, Mich., manufacturer of electric welding equipment, has appointed the Welding Service & Sales Co., Donovan Building, Detroit, T. M. Butler, manager, as agent in the Detroit territory.

The General American Tank Car Corporation moved its general offices from the Harris Trust Building, to the Illinois Merchants Bank Building, Chicago, on March 1.

The Whiting Corporation, Harvey, Ill., has opened a sales office at 997 Ellicott Square, Buffalo, with W. R. Hans as district manager. Other agents were appointed as follows: Denver, 211 Tramway Building, S. G. Elbe, Inc.; Kansas City, Mo., 306 Elmhurst Building, Edward S. King; Los Angeles, Cal., Drawer 251, Huntington Park, Snyder Foundry Supply Co.

F. J. Ryan & Co., Philadelphia, has appointed the Stanley P. Rockwell Co., Hartford, Conn., and the Alfred H. Bullion Co., San Francisco, as territorial representatives for the sale of its standard heating equipment, including electric furnaces, oil burners, automatic temperature and combustion control apparatus and other industrial heating specialties.

The Chamberlin-Roome Steel Co., jobber in iron and steel, 3902 South Ashland Avenue, Chicago, has changed its corporate style to the Chamberlin Steel Co.

The Minneapolis Steel & Machinery Co., Minneapolis, Minn., has opened an office in the L. C. Smith Building, Seattle, in charge of P. E. Lattner, who was for some years connected with the Spokane office of the company handling the steel fabrication department while J. S. Buckholz was in charge of the machinery department. Mr. Lattner will continue to handle steel fabrication in the Seattle office and Mr. Buckholz remains in the Spokane office, handling machinery equipment as before.

Behrer & Co., 77-81 Beekman Street, New York, has opened a branch warehouse and store rooms at Roslyn Road and Second Street, Mineola, L. I., where it will carry a complete line of plumbing and heating equipment, sheet metal supplies, pipe, valves and fittings.

Crocker Brothers, 21 East Fortieth Street, New York, have resumed the exclusive sale of Emporium brand of lake ore foundry pig iron for the Emporium Iron Co., Emporium, Pa.

The General Piston Ring Co. has moved plant and offices to larger quarters at Tipton, Ind., increasing floor space over 100 per cent.

The Universal Crane Co., Cleveland, has appointed the Factory Products Co., 204 Oliver Building, Pittsburgh, representative in that territory. W. W. Adams, president Factory Products Co., has been identified with the sale of locomotive cranes in this section since 1907.

The Crocker-Wheeler Co., Ampere, N. J., has closed its Baltimore office and opened an office in Atlanta, Ga., with George D. Anderson, Jr., in charge. S. M. Conant, formerly in charge of the Baltimore office has been appointed assistant sales manager and now is located at Ampere. Effective March 28, the Pittsburgh office in charge of J. R. Lewis will be removed from the Henry W. Oliver Building to the Dravo Building, 300 Pennsylvania Avenue. In connection with this office a warehouse will be maintained carrying a stock of from 100 to 150 motors.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price.....	3.24c.
Swedish charcoal iron bars, base.....	7.00c. to 7.25c.
Soft steel bars, base price.....	3.24c.
Hoops, base price.....	4.49c.
Bands, base price.....	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base.....	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base.....	3.24c.
Steel plates, ¼ in. and heavier.....	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.....	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger).....	3.65c.
Toe-calk, ½ x ¾ in. and larger.....	4.20c.
Cold-rolled strip, soft and quarter hard.....	7.00c.
Open-hearth spring steel.....	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds.....	4.15c.
Squares, flats and hex.....	4.65c.
Standard tool steel, base price.....	15.00c.
Extra tool steel.....	18.00c.
Special tool steel.....	23.00c.
High-speed steel, 18 per cent tungsten.....	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10.....	3.89c.
No. 12.....	3.94c.
No. 14.....	3.99c.
No. 16.....	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20.....	4.30c. to 4.45c.	.....
Nos. 22 and 24.....	4.45c. to 4.60c.	5.10c.
No. 26.....	4.50c. to 4.65c.	5.15c.
No. 28*.....	4.60c. to 4.75c.	5.25c.
No. 30.....	4.70c. to 4.95c.	.....

Galvanized

	Per Lb.
No. 14.....	4.70c. to 4.85c.
No. 16.....	4.85c. to 5.00c.
Nos. 18 and 20.....	5.00c. to 5.15c.
Nos. 22 and 24.....	5.15c. to 5.30c.
No. 26.....	5.30c. to 5.45c.
No. 28*.....	5.60c. to 5.75c.
No. 30.....	6.10c. to 6.25c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Weld			Wrought Iron		
	Black	Galv.		Black	Galv.
½ in. Butt...	46	29	½ in. Butt..	4	+19
¾ in. Butt...	51	37	¾ in. Butt..	11	+9
1-3 in. Butt..	53	39	1-1½ in. Butt	14	+6
2½-6 in. Lap	48	35	2-in. Lap...	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap..	11	+6
11&12 in. Lap	37	12	7-12 in. Lap.	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
72½, 25, 10 and 5 per cent off list

Steel Wire

	Per Lb.
BASE PRICE* ON NO. 9 GAGE AND COARSER	
Bright, basic.....	4.25c. to 4.50c.
Annealed soft.....	4.50c. to 4.75c.
Galvanized annealed.....	5.15c. to 5.40c.
Coppered basic.....	5.15c. to 5.40c.
Tinned soft Bessemer.....	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet.....	18½c. to 19½c.
High brass wire.....	19½c. to 20½c.
Brass rods.....	16½c. to 17½c.
Brass tube, brazed.....	26½c. to 27½c.
Brass tube, seamless.....	23¼c. to 24¼c.
Copper tube, seamless.....	24¼c. to 25¼c.

Copper Sheets

Sheet copper, hot rolled, 21¼c. to 22½c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin	Grade	Grade	Coke—14 x 20	Prime	Seconds
	"AAA"	"A"	80 lb..	\$6.15	\$5.90
	Charcoal	Charcoal	90 lb..	6.30	6.05
	14x20	14x20	100 lb..	6.45	6.20
IC..	\$11.25	\$8.85	IC..	6.65	6.40
IX..	12.85	10.85	IX..	7.85	7.60
IXX..	14.40	12.55	IXX..	9.00	8.75
IXXX..	15.75	13.85	IXXX..	10.35	10.10
IXXXX..	17.00	15.05	IXXXX..	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	\$7.00 to \$8.00
IC.....	7.25 to 8.25
IX.....	8.25 to 8.75
Fire door stock.....	9.00 to 10.00

Tin

Straits, pig.....	57c.
Bar.....	60c. to 63c.

Copper

Lake ingot.....	16½c.
Electrolytic.....	16½c.
Casting.....	16 c.

Spelter and Sheet Zinc

Western spelter.....	9¼c.
Sheet zinc, No. 9 base, casks.....	12c. open 12¼c.

Lead and Solder*

American pig lead.....	10c. to 10½c.
Bar lead.....	13c.
Solder, ½ and ½ guaranteed.....	40c.
No. 1 solder.....	37c.
Refined solder.....	30½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	75c. to 90c.
Commercial grade, per lb.....	35c. to 50c.
Grade D, per lb.....	25c. to 35c.

Antimony

Asiatic.....	20c. to 21c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.....	36c.
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Old Metals

The market is somewhat stronger and business shows some activity. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible.....	12.00
Copper, heavy wire.....	11.50
Copper, light bottoms.....	9.75
Brass, heavy.....	7.25
Brass, light.....	6.00
Heavy machine composition.....	8.75
No. 1 yellow brass turnings.....	8.50
No. 1 red brass or composition turnings.....	8.50
Lead, heavy.....	7.00
Lead, tea.....	5.50
Zinc.....	4.25
Cast aluminum.....	17.00
Sheet aluminum.....	17.00



HIS issue is a tribute to the foresight and helpful spirit of American industry.

We take this occasion to express our appreciation to our advertisers for the large amount of business they have intrusted to The Iron Age for publication in this issue.

To them and to our readers we extend best wishes for a happy and prosperous 1925.

Advertising the Product that "Can't Be Advertised"

Continuous Use of Small Space in Business Papers Creates
Definite Personality for Producers of a Drab Product

By Roy W. Johnson

SIXTEEN years ago, a moderate sized producer of cold drawn steel shafting at Youngstown, Ohio, departed from precedent, and instead of running a standing card in the business press to "keep his name before the public," began a consistent and persistent effort to establish a definite personality in the minds of users of the product. Nothing miraculous happened. The company did not leap into a position of dominance in the steel industry over night, or anything like that.

As a matter of fact, nothing of the sort was expected, or attempted. It was farthest from the company's thought to attempt the spectacular. Very seldom was a larger space used than quarter pages, and the advertising was run almost exclusively in two publications. (*Of which The Iron Age is one!*)

For all that, however, the story is worth telling, both on account of the results that have been obtained and because it shows what may be done by an intelligent use of small space. There are dozens—yes, hundreds—of concerns in much the same situation; with products that present absolutely no distinctive "talking points" whatever, a market that is "hard-boiled" to the last degree, and who cannot afford to spend money for full pages and double-spreads, even assuming that they could make effective use of them. The experience of the Fitzsimons Company ought to be interesting to many sales executives with that sort of a problem.

In the first place, it is perhaps hard to imagine a product that is any "harder to advertise" than cold drawn steel shafting. When you have got it in finished form it is nothing in the world but a length of steel that has been

pulled through a die that is smaller than the original bar as it came from the rolling mill.

This drawing process produces a bar that is true to size and shape throughout its length, with a smooth, polished surface, and a rind, if one may use so untechnical an expression, that is considerably tougher than the inside. It is mainly used as raw material for automatic screw machines which cut it up into small parts for assembly, such as nuts, bolts, screws, etc.

It is also used to a considerable extent for line shafts in factories, elevator slides, pump rods, and so following. Not much opportunity here for bragging about the superiority of one's product. It is either "right" or it isn't, and if it is right, it is merely according to specifications. The minute it is put to use it loses its identity, and becomes merely an undistinguished part of something quite different. Not unlike our old friend the mule, "without pride of ancestry or hope of posterity."

Again, consider the market, consisting of a comparatively few manufacturers—those who build mechanical equipment of one sort or another, and the specialized parts makers who manufacture small parts on contract for others. Mighty small chance to get under the hides of their professional purchasing agents with "human interest" stories, eloquent diatribes on quality, or claims of superiority. No chance at all, as a matter of fact.

For which reasons most of the steel concerns in this branch of the industry content themselves with a standing card in the business papers and issue regular stock lists covering the shapes and sizes they have on hand for immediate delivery. How to

make advertising effective beyond that is a real problem.

With that background, and under those conditions, The Fitzsimons Company undertook to demonstrate what could be done through advertising to increase its business by establishing a definite idea in the minds of the trade. Obviously, nobody was going to send in an order for a couple of car-loads of screw machine steel on the strength of a quarter-page of type. Equally, nobody was very likely to wire in a demand to have a salesman sent around immediately.

On the other hand, the company reasoned this way: "Most of these people know us now, if they know us at all, merely as a name and address. That doesn't distinguish us from any other mill in our line for they all have names and addresses. We can't holler about superiority of product, or price, but if we can create the impression that ours is a pleasant and a satisfactory concern to deal with, we shall begin to stand out from the ruck. It is worth trying, anyway."

Advertising Brought Results

That was sixteen years ago, and the company has been keeping at it on that line ever since. As for the results, they are best summed up, perhaps, by quoting Mr. R. E. Fitzsimons, the company's general manager: "While it is practically impossible," he says, "to trace direct sales to advertising of this character, we know that it has paid us many times over for the effort we have put into it. It has been widely commented upon throughout the trade from the very start, and continues to be right along."

"We are constantly getting inquiries as to who is preparing it for us, and it is generally men-

tioned in one way or another by customers and prospects when we interview them. In several instances it has secured interviews for our salesmen in purchasing departments they had never been able to reach before. One of our men told me that he had called repeatedly on a certain large automobile concern without seeing the purchasing agent at all. After the advertising had been running for six months or so he made a routine call, was invited in and told that though they were not taking on any new sources for material at that time, they were reading the advertising with a lot of interest. Since then we have secured a good deal of business from them. Much of the same thing has happened in other places.

"While we haven't tried to keep any records to prove it, being satisfied in our own minds that the advertising was more than paying its way, we are convinced that we are doing a volume of business at a considerably lower selling expense than would be possible without the intangible good-will the advertising has built up for us.

Personality in Copy

"I mean that we are operating with fewer salesmen than would be necessary to get the volume without this good-will, and the salesmen we have can work to much better advantage. Most of the benefit is, of course, wholly intangible, and impossible to measure. It is, as I have said, difficult to prove to anybody else

that this advertising expenditure has paid in dollars and cents, because we have never had to prove it to ourselves. We know without trying to prove it.

"As for the copy itself," says Mr. Fitzsimons, "we have simply tried to tell the simple, unvarnished truth about ourselves, the sort of folks we are, and the way we look at business. We have tried to make it brief, easy to read and simple in construction, avoiding always anything that might sound like an over-statement. Sometimes we have been told that we have gone too far in understating our claims, but we notice that that is always a recommendation in the eyes of the man who tells us so.

"We try to keep superlatives out of the text entirely, and to make no positive claims, but rather to say that 'we try' to do so-and-so, that 'we think' thus-and-thus, or that we 'believe' you will find us a satisfactory source for material. After the advertising had been running for several years, we did add a sort of standard slogan in small type below our signature: 'A good concern to do business with.' We did this because it was really the main point we were trying to demonstrate, and in a way it was the theme of the whole series of advertisements.

"What we are after, in a word, is to establish the impression that we are a source for material from which certain things can be expected besides material; such

things as dependability, sincerity, reasonable pride in rendering good service, and a deference to the other fellow's views and opinions. We admit frankly and specifically that we are not infallible, that we do sometimes make mistakes, and that we have no magic formulas or panaceas. We have tried not to take ourselves too seriously, and we have often been surprised at the interest that has been displayed in our insignificant little quarter-page of space."

The experience of this concern, which is relatively small and inconspicuous in comparison with many of its competitors, ought to be suggestive to others whose products do not present any obvious outstanding features, or those whose advertising budget is necessarily limited. Even so little space as a quarter-page a week can be made effective if it is consistently filled with copy that has a definite flavor of its own so that it comes in time to reflect a distinctive personality.

It has often been said that the highest function of advertising is to reflect accurately the true character of the house, and this is quite possible, even in small space. There is nothing sensational or spectacular about the Fitzsimons copy; but there is nothing spectacular about the business. Incidentally, it is worth noting that this concern has made effective and somewhat unusual use of the "emphasis of understatement," which is generally the strongest kind of emphasis there is.

We Get New Business

mainly by presenting the unvarnished truth about ourselves, and we try to keep it by deserving to keep it. You are invited to test the results of this policy when it suits your convenience.

THE FITZSIMONS COMPANY
"A good concern to do business with"
YOUNGSTOWN, OHIO

COLD DRAWN SCREW STEEL AND
SHAFTING, ROUNDS, SQUARES,
FLATS, HEX. AND SPECIAL
SHAPES.

We Welcome New Business

mainly as an opportunity to demonstrate the general dependability of our service. A dependability which we try to make so evident that it needs no further comment from us.

THE FITZSIMONS COMPANY
"A good concern to do business with"
YOUNGSTOWN, OHIO

COLD DRAWN SCREW STEEL AND
SHAFTING, ROUNDS, SQUARES,
FLATS, HEX. AND SPECIAL
SHAPES.

We Have No Magic Formulas

no slogans, and no pet systems for getting business. We try to keep consistently on the job, and to keep our promises. That isn't a spectacular program, perhaps, but it makes for satisfaction all around.

THE FITZSIMONS COMPANY
"A good concern to do business with"
YOUNGSTOWN, OHIO

COLD DRAWN SCREW STEEL AND
SHAFTING, ROUNDS, SQUARES,
FLATS, HEX. AND SPECIAL
SHAPES.

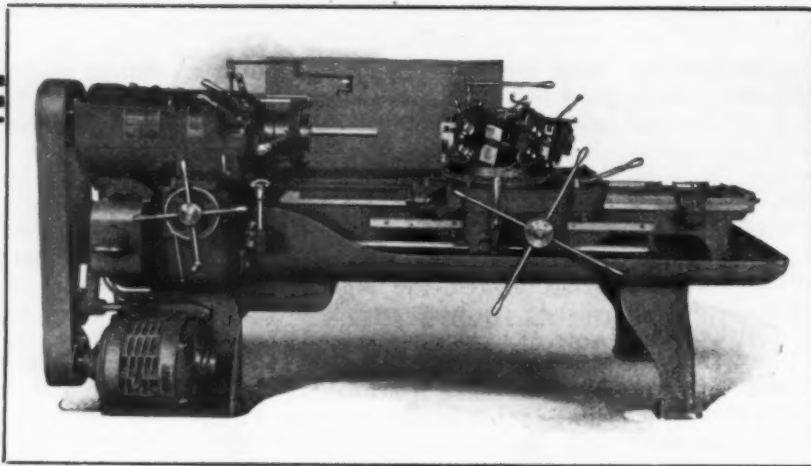
Any Amount of Argument

in the form of "selling talk" won't alter the facts to any noticeable extent. And in soliciting business we strive to get the facts first, and base our claim upon them rather than upon our desire for an order.

THE FITZSIMONS COMPANY
"A good concern to do business with"
YOUNGSTOWN, OHIO

COLD DRAWN SCREW STEEL AND
SHAFTING, ROUNDS, SQUARES,
FLATS, HEX. AND SPECIAL
SHAPES.

Dependability, sincerity, reasonable pride in rendering good service, and deference to the other fellow's views and opinions—these were some of the impressions the Fitzsimons Company sought to establish through this type of copy



3 x 36 Hartness Flat Turret Lathe

with "steel head" cross sliding headstock Automatic Chuck and Roller Feed.

Turns pieces from the bar to 3" in diameter and in length up to 36". When equipped

with Automatic Die outfit cuts U.S.S. threads sizes $\frac{3}{4}$ " to 3" in diameter, inclusive by eighths.

Similar to the 2 $\frac{1}{4}$ "x24" machine but larger.

JONES & LAMSON MACHINE CO., Springfield, Vermont, U. S. A.
503 Market St., San Francisco, Cal., and 19-21 Water Lane, Queen Victoria Street, London, E. C.



PIG IRON IRON ORE COAL

THE M.A. HANNA CO.



CLEVELAND

Buffalo Pittsburgh Detroit
Cincinnati Philadelphia Toronto
New York Chicago Toledo
Williamsport Baltimore

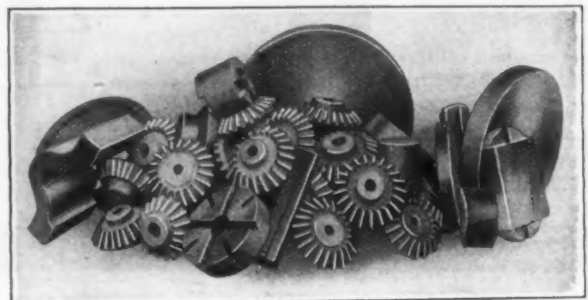


CASTINGS

LOW and SPECIAL CARBON STEEL
NICKEL STEEL, VANADIUM STEEL

For Steam and Gas Engines, Automobile Parts, Gears, etc.

We would be pleased to submit samples of our metal
and quote on your requirements.



MALLEABLE IRON FITTINGS CO. - - - Branford, Conn.



It's in the Steel, too!

THE one bearing company fully making its own steel is the Timken Roller Bearing Company.



In its own electric furnaces, Timken produces the special Timken Bearing steel, compounded in its own metallurgic laboratories, from knowledge gained in successfully applying over 120,000,000 Timken Bearings to machinery of all kinds, including motor cars.

So the very steel itself assures an overlong period of attentionless operation from Timken Tapered Roller Bearings, even though Timken adjustability is available to offset wear if it ever becomes noticeable.

From raw material to operating principle, therefore, Timken Bearings offer advantages which make them a potent economic element in the life of our time.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* BEARINGS



HY-TEN

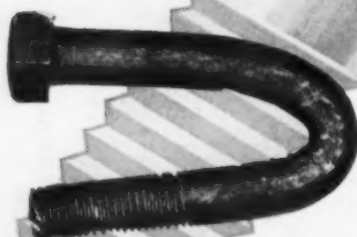
"B" TEMPER NO. 3 ANALYSIS ALLOY STEEL

for

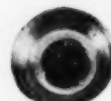
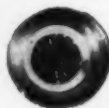
HEAT-TREATED BOLTS



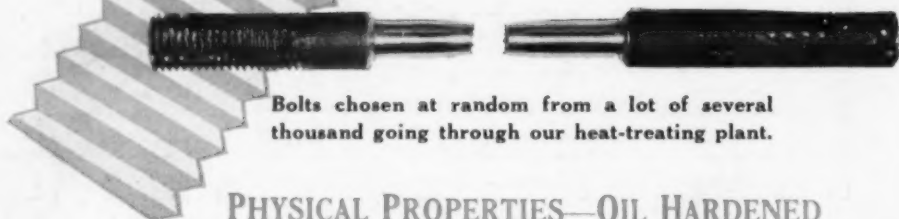
ACTUAL SIZE— $\frac{3}{4}$ " DIA. BY 9" LONG



BENT COLD



NOTE RADIAL FRACTURE



Bolts chosen at random from a lot of several thousand going through our heat-treating plant.

PHYSICAL PROPERTIES—OIL HARDENED

Elastic Limit . . . 120,000 lbs.
Tensile Strength . . 146,500 lbs.

Elongation . . . 18% in 2"
Reduction of Area . 50.8%



Hy-ten "B" No. 3 is available in all sizes for immediate shipment from stock. Very prompt rollings can also be made from Hy-ten billets on hand at the mill. We are equipped to do heat-treating on a production basis.

WHEELOCK, LOVEJOY & CO., INC.

CAMBRIDGE : NEW YORK : CLEVELAND : CHICAGO

